January 2022

West Seattle and Ballard Link Extensions

Draft Environmental Impact Statement

EXECUTIVE SUMMARY

SOUNDTRANSIT

U.S. Department of Transportation
Federal Transit Administration

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January 28, 2022

Dear Recipient:

The U.S. Department of Transportation Federal Transit Administration (FTA) and Sound Transit (the Central Puget Sound Regional Transit Authority) have prepared this Draft Environmental Impact Statement on the proposed West Seattle and Ballard Link Extensions Project. Sound Transit is the project proponent.

The Draft Environmental Impact Statement has been prepared pursuant to the National Environmental Policy Act (42 United States Code 4321 to 4370e) and the State Environmental Policy Act (Chapter 43.21C Revised Code of Washington) to inform the public, agencies, and decision makers about the environmental consequences of building and operating the West Seattle and Ballard Link Extensions in the city of Seattle. In May 2019, the Sound Transit Board identified the alternatives for study in the Draft Environmental Impact Statement, including preferred alternatives for the majority of the West Seattle Link Extension and the Ballard Link Extension segments. The Sound Transit Board identified additional alternatives for study in the Draft Environmental Impact Statement in October 2019.

The major choices for the project involve the route of the light rail line and station locations. The Sound Transit Board will consider the Draft Environmental Impact Statement, public and agency comments, and other information before confirming or modifying the preferred route and station locations. FTA and Sound Transit will prepare a Final Environmental Impact Statement, which will respond to comments on the Draft Environmental Impact Statement and include an evaluation of impacts and mitigation for the preferred alternative and other alternatives considered. After completion of the Final Environmental Impact Statement, the Sound Transit Board will select the project to be built. FTA will also issue a Record of Decision, which will state FTA's decision on the project and list Sound Transit's mitigation commitments to reduce or avoid impacts.

This is the Executive Summary of the Draft Environmental Impact Statement. Also available are a separately bound Draft Environmental Impact Statement and technical reports. These documents are included on the enclosed flash drive and online at *www.soundtransit.org/system-expansion/west-seattle-ballard-link-extensions*. Please see the Fact Sheet in this Executive Summary regarding document availability, information on public meetings, and who to contact for further information about the Draft Environmental Impact Statement.

Sincerely,

Lauren Swift

Lauren Swift, AICP
Central Corridor Environmental and Business Operations Manager

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Commitment to Accessibility

Sound Transit and the United States Department of Transportation - Federal Transit Administration are committed to ensuring that information is available in appropriate alternative formats to meet the requirements of persons who have a disability. If you require an alternative version of this file, please contact *FTAWebAccessibility@dot.gov*.

WEST SEATTLE AND BALLARD LINK EXTENSIONS

SEATTLE, WASHINGTON

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Submitted pursuant to
the National Environmental Policy Act (NEPA) (42 United States Code 4322(2)(c))
and the State Environmental Policy Act (SEPA) (Ch. 43.21C Revised Code of Washington)
by the

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL TRANSIT ADMINISTRATION

and

CENTRAL PUGET SOUND REGIONAL TRANSIT AUTHORITY

(Sound Transit)
in cooperation with
UNITED STATES ARMY CORPS OF ENGINEERS
UNITED STATES COAST GUARD
UNITED STATES POSTAL SERVICE
PORT OF SEATTLE
CITY OF SEATTLE

December 21, 2021
Date of Approval

LINDA M GEHRKE
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Linda M. Gehrke, Regional Administrator
NEPA Responsible Official
For Federal Transit Administration, Region 10

December 21, 2021
Date of Approval

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Deputy Director, Office of Environmental Affairs and Sustainability
SEPA Responsible Official
For Sound Transit

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West Seattle and Ballard
Link Extensions

FACT SHEET

Proposed Action

The Central Puget Sound Regional Transit Authority (Sound Transit) is proposing to expand the regional light rail system south and west from Downtown Seattle to West Seattle and north from Downtown Seattle to Ballard. The proposed light rail extensions, called the West Seattle and Ballard Link Extensions (WSBLE), would be within the city of Seattle in King County, Washington. The proposed project is part of the Sound Transit 3 Plan, funding for which was approved by voters in 2016 (Sound Transit 2016).

The WSBLE Project is an 11.8-mile corridor through the city of Seattle, the most densely populated city of the Puget Sound region. The West Seattle Link Extension would be about 4.7 miles and includes stations at SODO, Delridge, Avalon, and Alaska Junction. The Ballard Link Extension would be about 7.1 miles from Downtown Seattle to Ballard's Northwest Market Street area and includes a new 3.3-mile rail-only tunnel from Chinatown-International District to South Lake Union and Seattle Center/Uptown. Stations would serve the following areas: Chinatown-International District, Midtown, Westlake, Denny, South Lake Union, Seattle Center, Smith Cove, Interbay, and Ballard.

The Draft Environmental Impact Statement evaluates multiple Build Alternatives in the project corridor, including different alignments and station options. The Draft Environmental Impact Statement also includes a No Build Alternative. This allows an analysis of the potential impacts of not building the WSBLE Project and provides a basis for comparing the Build Alternatives to a future baseline condition.

In May 2019, the Sound Transit Board of Directors (Board) identified one or more preferred alternatives for most of the project segments. A preferred alternative is not a decision on the project to build; instead, it is a statement of preference based on currently available information. The Draft Environmental Impact Statement evaluates all alternatives, including a No Build Alternative. The Board is not bound by its identification of a preferred alternative. After completion of the Draft Environmental Impact Statement and review of public and agency comments received, the Board will confirm or modify the preferred alternative. However, the Board will not make a final decision on the project to be built until after completion of the Final Environmental Impact Statement. At that time, the Board may select from among any of the alternatives evaluated in the Environmental Impact Statement.

Project Proponent

Central Puget Sound Regional Transit Authority (Sound Transit)
401 South Jackson Street
Seattle, WA 98104-2826
www.soundtransit.org

Dates of Construction and Opening

The West Seattle Link Extension is expected to open in 2032 and the Ballard Link Extension is expected to open in 2037 or 2039, depending on funding availability. Due to steeply rising real estate prices and other construction expenses, Sound Transit projects currently in early planning and design, including the West Seattle and Ballard Link Extensions Project, are seeing significant cost estimate increases. To ensure that funding remains available to complete all voter-approved projects, the Board conducted a "realignment" process that established a program schedule that is affordable, utilizing current financial projections and cost estimates to set the general order in which projects will advance. This "affordable" schedule established an approach to prioritize, fund, and manage program work over time (Resolution 2021-05). In addition, the Board adopted a "target" schedule for priority projects, reliant upon reductions in the affordability gap. To reduce the affordability gap, Sound Transit will pursue expanded financial capacity (Motion M2020-37); develop and implement a cost savings plan; identify cost savings for the Sound Transit budget outside of the capital program; identify opportunities to reduce cost and planning delays; and engage project stakeholders in discussions to address the trade-offs between project scope, schedule, and new financial resources to inform Board decision-making on project schedule.

Sound Transit proposes to begin building the proposed project in 2026. Based on realignment, the West Seattle Link Extension would begin operations in 2032 under both the affordable and the target schedule. The Ballard Link Extension is anticipated to begin operations in 2037 under the target schedule. Under the affordable schedule, the Ballard Link Extension from SODO to Smith Cove Station is anticipated to begin operation in 2037, and from Smith Cove Station to Ballard Station in 2039. The affordable schedule would implement the West Seattle and Ballard Link Extensions Minimum Operable Segment (M.O.S.), as described in Section 2.4.2.1, West Seattle and Ballard Link Extensions Minimum Operable Segment.

National Environmental Policy Act (NEPA) Lead Agency

Federal Transit Administration
915 2nd Avenue, Suite 3192
Seattle, Washington 98174-1002
https://www.transit.dot.gov/about/regional-offices/region-10/region-10

NEPA Responsible Official

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State Environmental Policy Act (SEPA) Responsible Official

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Federal Transit Administration

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Seattle, WA 98174-1002

Anticipated Permits and Approvals

Federal

Federal Transit Administration:

- NEPA Final Environmental Impact Statement and Record of Decision
- National Historic Preservation Act Section 106 Review
- United States Department of Transportation Act Section 4(f)
- Land and Water Conservation Fund 6(f) (if needed)

Federal Emergency Management Agency:

- Conditional Letter of Map Revision (if needed)
- Letter of Map Revision (if needed)

United States Army Corps of Engineers:

- Clean Water Act, Section 404 (if needed)
- Rivers and Harbors Act, Section 10 (if needed)
- United States Code Title 33 Section 408 Review (if needed)

United States Coast Guard:

- United States Coast Guard Bridge Permit (if needed)

United States Fish and Wildlife Service:

- Federal Endangered Species Review

National Oceanic and Atmospheric Administration Fisheries Service:

- Federal Endangered Species Review
- Essential Fish Habitat Review
- Marine Mammal Take Incidental Harassment Authorization (if needed)

United States Department of the Interior:

- National Historic Preservation Act Section 106 Review
- United States Department of Transportation Act Section 4(f)
- Land and Water Conservation Fund 6(f)

State, County, and Regional

Sound Transit:

- SEPA Project Approval

Washington Department of Fish and Wildlife:

- Hydraulic Project Approval (if needed)

Washington State Department of Archaeology and Historic Preservation:

- National Historic Preservation Act Section 106 Review

Washington State Department of Ecology:

- Coastal Zone Management Consistency Certification
- Dam Safety Permit
- National Pollutant Discharge Elimination System Stormwater Discharge Permit, Clean Water Act Section 402
- Underground Storage Tank 30-day Notice
- Wastewater Discharge Permit
- Water Quality Certification: Clean Water Act Section 401

Washington State Department of Ecology and Puget Sound Clean Air Agency:

- Notice of Construction (Air Quality)

Washington State Department of Natural Resources

- Aquatic Lands Lease

Washington State Department of Transportation:

- Air Space Lease
- Utility Franchise

Washington Station Recreation and Conservation Office:

- Land and Water Conservation Fund 6(f)

City of Seattle

- Master Use Permit, which includes building permits
- Environmentally Critical Area Review, including wetlands, streams, steep slopes, critical habitat, and buffers
- Shoreline Substantial Development Permit

- Noise variances for construction
- Permanent, interim, or temporary street use permits
- Access or use easements for city-owned properties
- Reviews and approvals: Planning, Design, and local Landmark Districts
- Street or alley vacations

Utility Providers:

- Pipeline and utility crossing permits
- Easements and use agreements

Principal Contributors

This Environmental Impact Statement was prepared by consultants at the following firms: Jacobs Engineering Group, HNTB, Fehr and Peers, Heffron Transportation, Cross-Spectrum Acoustics, Michael Minor and Associates, Turner Engineering Company, ECONorthwest, Irwin Writing/Editing, and EnviroIssues. See Appendix A for a detailed list of preparers.

Date of Issue of Draft Environmental Impact Statement

January 28, 2022

Commenting on the Draft Environmental Impact Statement

The Draft Environmental Impact Statement will be available for a comment period of 90 days. Comments on the Draft Environmental Impact Statement can be made in writing, by email, or at the public hearings. All comments are due by close of business on April 28, 2022. Send written comments to the following address:

WSBLE Draft Environmental Impact Statement Comments
c/o Lauren Swift
Sound Transit
401 South Jackson Street
Seattle, Washington 98104

Email comments should be sent to: *WSBLEDEIScomments@soundtransit.org*. Comments may also be submitted online through *https://wsblink.participate.online/* or left as a voicemail at the following number: 1-800-471-0879. Written or emailed comments should include the commentor's name and return address or email address. All comments may be submitted in languages other than English and will be translated. Comments may also be offered at a public hearing or open house:

Date	Location	Type of meeting
March 15, 2022; 5:30 p.m. to 7:30 p.m.	Virtual, focus on Interbay/Ballard	Presentation and public hearing, court reporter available
March 17, 2022; 12 p.m. to 7 p.m. [a]	Union Station, 401 South Jackson Street; corridor-wide focus	In-person open house, no hearing, court reporter available
March 22, 2022; 5:30 p.m. to 7:30 p.m.	Virtual, focus on Downtown	Presentation and public hearing, court reporter available
March 24, 2022; 5:30 p.m. to 7:30 p.m.	Virtual, focus on Chinatown-International District and SODO	Presentation and public hearing, court reporter available
March 30, 2022; 5:30 p.m. to 7:30 p.m.	Virtual, focus on West Seattle	Presentation and public hearing, court reporter available

[a] In-person open house is planned subject to state and local guidelines regarding social distancing due to COVID-19. Please check the Sound Transit website at *https://wsblink.participate.online/* or call 206-903-7229 to confirm in-person meeting. If the in-person event cannot be held due to COVID-19 concerns, a virtual event will be held in its place. Hours may differ if this becomes a virtual event.

All virtual meetings can be accessed via the following website: *https://wsblink.participate.online/*.

Next Actions

Following publication of this Draft Environmental Impact Statement and the close of the public comment period, the Board is expected to consider the comments received and then identify a Preferred Alternative for each of the project segments. In some segments, the Board may confirm or modify the Preferred Alternative identified in this Draft Environmental Impact Statement. In other segments the Board will identify a Preferred Alternative for the first time. The Final Environmental Impact Statement will analyze the Preferred Alternative in all segments along with the other proposed light rail alternatives and the No Build Alternative. The Final Environmental Impact Statement will also respond to the public and agency comments on the Draft Environmental Impact Statement. Following issuance of the Final Environmental Impact Statement, the Board will make a final decision on the alignment and station locations to be built for each extension.

The Federal Transit Administration will then issue a Record of Decision describing the project Sound Transit will build and how it will avoid, minimize, and mitigate environmental impacts.

Related Documents

- Final Supplemental Environmental Impact Statement, Long-Range Plan Update (Sound Transit 2014)
- Sound Transit 3 Plan (Sound Transit 2016)
- WSBLE Early Scoping Information Report (Sound Transit 2018a)
- WSBLE Early Scoping Summary Report (Sound Transit 2018b)
- WSBLE Level 1, Level 2, and Level 3 Alternatives Development reports (Sound Transit 2018c, 2018d, 2019a)
- WSBLE Scoping Information Report (Sound Transit 2019b)
- WSBLE Scoping Summary Report (Sound Transit 2019c)
- WSBLE Initial Assessment Results (Sound Transit 2019d)

All the above Sound Transit documents are available on the Sound Transit website, *www.soundtransit.org*.

Cost of Document and Availability for Review and/or Purchase

The Draft Environmental Impact Statement is available for public review in a variety of formats and locations. It is available on the Sound Transit website (https://www.soundtransit.org/system-expansion/west-seattle-ballard-link-extensions) and https://wsblink.participate.online/. It is also available on flash drive at no cost. Paper copies are available for the cost listed below, which does not exceed the cost of reproduction:

- Executive Summary - free
- Draft Environmental Impact Statement - $25.00
- Technical Reports - $15.00 each
- Conceptual Design Drawings - $15.00

Paper copies of these documents are available for review or purchase at the Sound Transit offices, Union Station, 401 South Jackson Street, Seattle, Washington, 98104. To request any of the documents, please contact Dominique Jones at (206) 689-4783 or Dominique.jones@soundtransit.org. To review them, please call the Sound Transit librarian at (206) 398-5344 weekdays from 8:00 a.m. to 5:00 p.m. to arrange an appointment.

Paper and flash drive copies of the Draft Environmental Impact Statement documents are also available for review at the following public places:

- Seattle Public Libraries.
  - Ballard Branch, 5614 22nd Avenue Northwest, Seattle, WA 98107
  - Beacon Hill Branch, 2821 Beacon Avenue South, Seattle, WA 98144
  - Central Library (Downtown Seattle), 1000 4th Avenue, Seattle, WA 98104
  - Columbia City Branch, 4721 Rainier Avenue South, Seattle, WA 98118
  - Delridge Branch, 5423 Delridge Way Southwest, Seattle, WA 98106
  - Greenwood Branch, 8016 Greenwood Avenue North, Seattle, WA 98103
  - High Point Branch, 3411 Southwest Raymond Street, Seattle, WA 98126
  - International District Branch, 713 8th Avenue South, Seattle, WA 98104
  - Magnolia Branch, 2801 34th Avenue West, Seattle, WA 98199
  - New Holly Branch, 7058 32nd Avenue South, Seattle, WA 98118
  - Queen Anne Branch, 400 West Garfield Street, Seattle, WA 98119
  - Rainier Beach Branch, 9125 Rainier Avenue South, Seattle, WA 98118
  - Southwest Branch, 9010 35th Avenue Southwest, Seattle, WA 98126
  - West Seattle Branch, 2306 42nd Avenue Southwest, Seattle, WA 98116
- King County Libraries.
  - Burien Library, 400 Southwest 152nd Street, Burien, WA 98166
  - White Center Library, 1409 Southwest 107th Street, Seattle, WA, 98146
- Community-Based Organizations.
  - Alliance for Pioneer Square, 105 South Main St Suite 201, Seattle, WA 98104, Seattle, WA 98194
  - Delridge Neighborhoods Development Association, Youngstown Cultural Arts Center, 4408 Delridge Way Southwest, Seattle, WA 98106
  - Seattle Chinatown International District Preservation and Development Authority, Hing Hay Coworks, 409B Maynard Avenue South, Seattle, WA 98104
- University of Washington – Suzzallo Libraries, 4000 15th Avenue Northeast Seattle, WA 98195

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West Seattle and Ballard
Link Extensions

EXECUTIVE SUMMARY

ES.1 Introduction

The Central Puget Sound Regional Transit Authority (Sound Transit) proposes to expand Link light rail transit service from Downtown Seattle to West Seattle and Ballard. The West Seattle and Ballard Link Extensions (WSBLE) Project is an 11.8-mile corridor in the city of Seattle in King County, Washington, the most densely populated county of the Puget Sound region (Figure ES-1). The WSBLE Project consists of two extensions: the West Seattle Link Extension and the Ballard Link Extension. The West Seattle Link Extension would be about 4.7 miles and include stations in the following areas: SODO, Delridge, Avalon, and Alaska Junction. The Ballard Link Extension would be about 7.1 miles. It would include a new 3.3-mile light rail-only tunnel from Chinatown-International District to South Lake Union and Seattle Center/Uptown. Stations would be in the following areas: Chinatown-International District, Midtown, Westlake, Denny, South Lake Union, Seattle Center, Smith Cove, Interbay, and Ballard. While both extensions are evaluated in this Draft Environmental Impact Statement, they are standalone projects that have independent utility from each other.

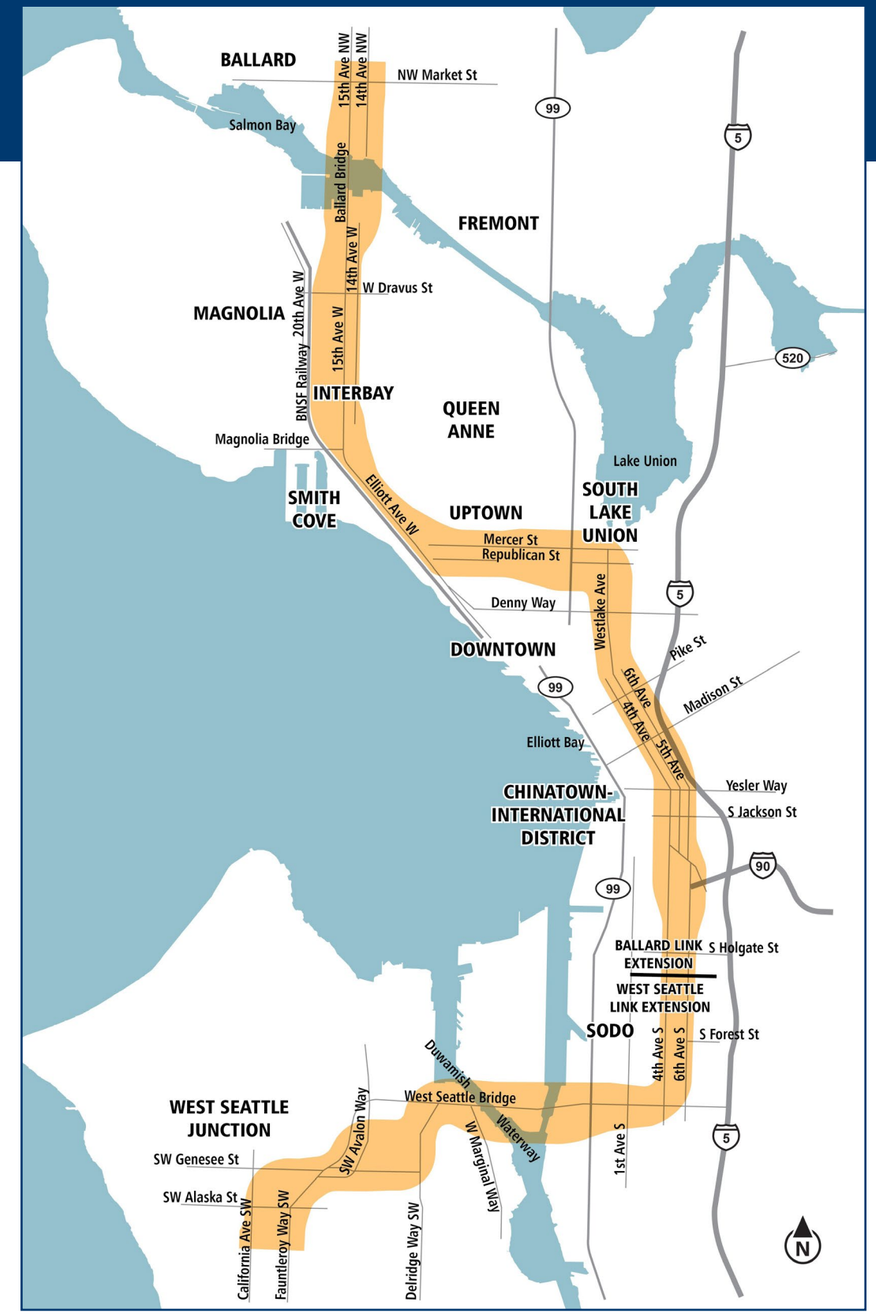
The WSBLE Project is part of the Sound Transit 3 Plan of regional transit system investments (Sound Transit 2016), funding for which was approved by voters in the region in 2016. Sound Transit and the Federal Transit Administration (FTA) are preparing this Draft Environmental Impact Statement for the WSBLE Project. The Environmental Impact Statement is a joint National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) document. FTA is the lead federal agency under NEPA, and Sound Transit is the lead agency for SEPA.

Puget Sound Regional Council

Puget Sound Regional Council, the regional metropolitan planning organization, develops policies and coordinates decisions about regional growth, transportation, and economic development planning within King, Kitsap, Pierce, and Snohomish counties. Puget Sound Regional Council is composed of over 80 jurisdictions, including all four counties; cities and towns; ports; state and local transportation agencies; and Tribal governments within the region.

Elevated light rail near Angle Lake Station

Figure ES-1. West Seattle and Ballard Link Extensions Project Corridor



The WSBLE Project would provide fast, reliable light rail in Seattle and connect dense residential and job centers throughout the Puget Sound region, while the new Downtown Seattle light rail tunnel would provide capacity for the entire regional system to operate efficiently. Puget Sound Regional Council (the regional metropolitan planning organization) and the City of Seattle have designated the following regional growth centers, manufacturing/industrial centers, and urban villages in the project corridor:

- **Regional growth centers.** The project corridor includes three regional growth centers designated by Puget Sound Regional Council and the City of Seattle: Seattle Downtown, South Lake Union, and Uptown. The First Hill/Capitol Hill growth center is also just east of the project corridor.
- **Manufacturing and industrial centers.** The project corridor includes two Manufacturing/Industrial Centers designated by Puget Sound Regional Council: the Duwamish and Ballard Manufacturing/Industrial Centers. The City of Seattle has designated these areas as the Duwamish Manufacturing/Industrial Center and the Ballard Interbay Northend Manufacturing/Industrial Center.
- **Urban villages.** There are two neighborhoods in the project corridor designated by the City of Seattle as urban villages: West Seattle Junction and Ballard neighborhoods.

These designations indicate that these areas will continue to increase in residential and/or employment density over the next 30 years.

Regional transit service in the project corridor includes regional bus service, ferry service, light rail, Sounder commuter rail, and Amtrak passenger rail service. Light rail currently operates between the Angle Lake Station in the city of SeaTac and the Northgate Station in Seattle, traveling through the Downtown Seattle Transit Tunnel. Extensions of light rail are under construction north to Lynnwood and east to Bellevue and Redmond, and south to Federal Way, and are expected to begin operation in 2024. Planned light rail extensions would continue south to the Tacoma Dome, expected to begin service in 2032, and north to Everett, planned to begin service in 2037. The West Seattle Link Extension is scheduled to open in 2032, initially providing service between an Alaska Junction Station and a new SODO Station as the interim terminus. The Ballard Link Extension is scheduled to begin service in 2037. Depending on funding availability, service from Smith Cove Station to the Ballard Station is scheduled to open in 2037 or 2039. Figure ES-2 shows how WSBLE would connect to the regional Link light rail system, and Figure ES-3 shows the full system planned for operation in 2042.

Figure ES-2. Connecting WSBLE to Regional Link Light Rail

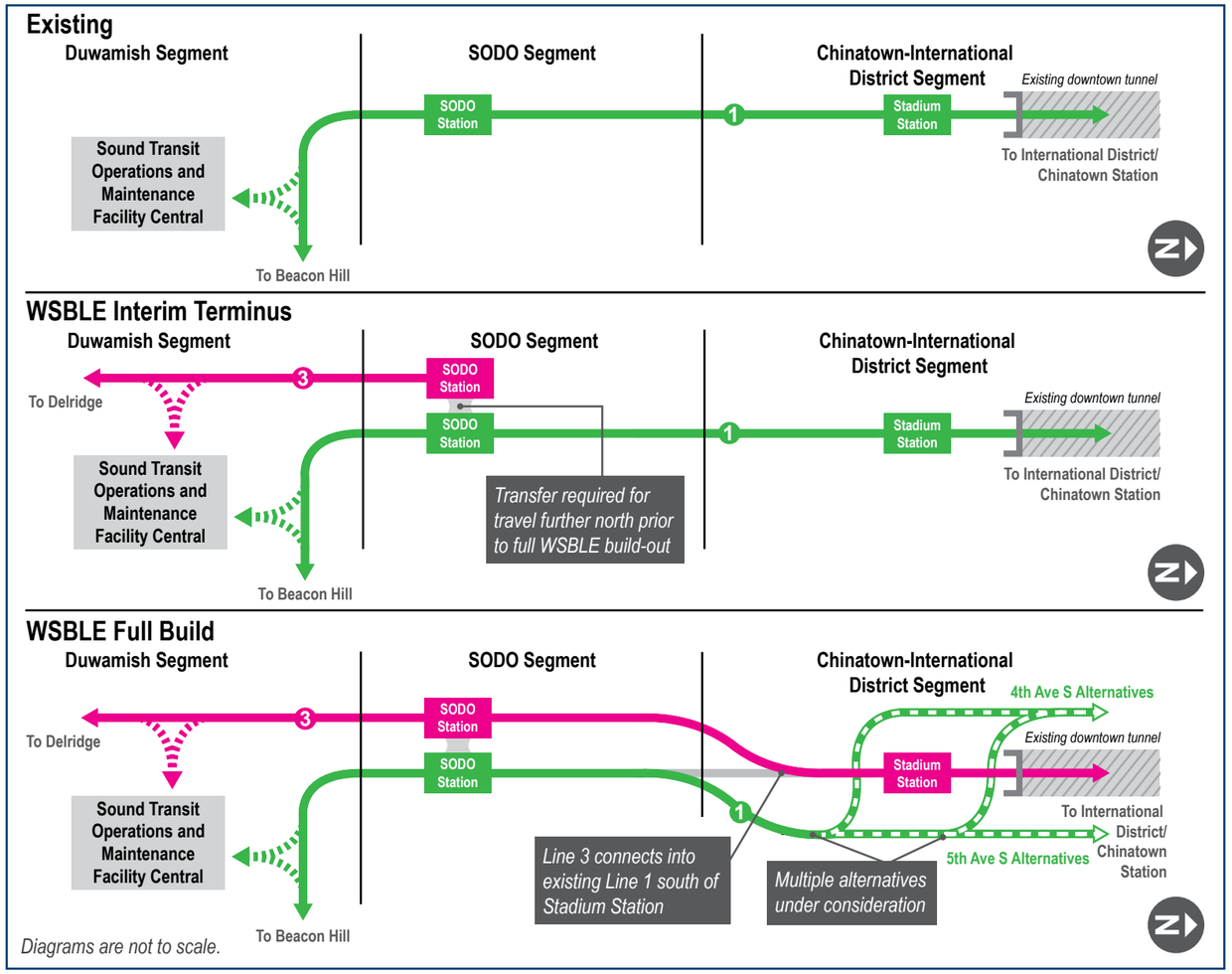
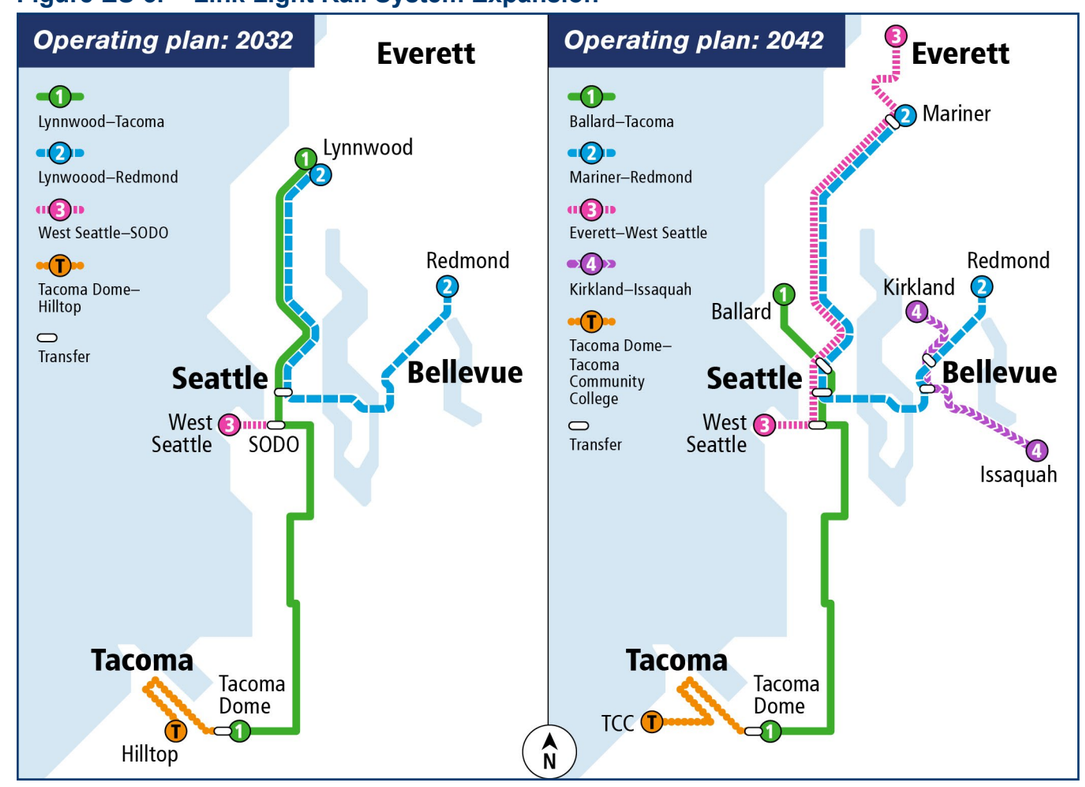


Figure ES-3. Link Light Rail System Expansion



ES.2 Purpose and Need

ES.2.1. Purpose of the WSBLE Project

The purpose of the WSBLE Project is to expand the Sound Transit Link light rail system from Downtown Seattle to West Seattle and Ballard, to make appropriate community investments to improve mobility, and to increase capacity and connectivity for regional connections in order to achieve the following:

- Provide high-quality rapid, reliable, and efficient light rail transit service to communities in the project corridor as defined through the local planning process and reflected in the Sound Transit 3 Plan (Sound Transit 2016).
- Improve regional mobility by increasing connectivity and capacity through Downtown Seattle to meet the projected transit demand.
- Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's *Regional Transit Long-Range Plan* (Sound Transit 2014).
- Implement a system that is technically and financially feasible to build, operate, and maintain.
- Expand mobility for the corridor and the region's residents, which include transit-dependent people, low-income populations, and communities of color.
- Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development and multi-modal integration in a manner that is consistent with local land use plans and policies, including Sound Transit's Adopting an Equitable Transit Oriented Development Policy (Sound Transit 2018) and sustainability plan (Sound Transit 2019).
- Encourage convenient and safe non-motorized access to stations, such as bicycle and pedestrian connections, consistent with Sound Transit's *System Access Policy* (Sound Transit 2013).
- Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built, and social environments through sustainable practices.

ES.2.2. Need for the WSBLE Project

The following conditions within the project corridor demonstrate the need for the WSBLE Project:

- When measured using national standards, existing transit routes between Downtown Seattle, West Seattle, and Ballard currently operate with poor reliability. Roadway congestion in the project corridor will continue to degrade transit performance and reliability as the city is expected to add about 135,000 people and about 150,000 jobs to the city between 2015 and 2040 (Puget Sound Regional Council 2018b).
- Increased ridership from regional population and employment growth[1] will increase operational frequency in the existing Downtown Seattle Transit Tunnel, requiring additional tunnel capacity.
- Puget Sound Regional Council (the regional metropolitan planning organization) and local plans call for high-capacity transit in the corridor consistent with VISION 2050 (Puget Sound Regional Council 2020) and the *Regional Transit Long-Range Plan* (Sound Transit 2014).
- The region's citizens and communities, including transit-dependent residents, low-income populations, and communities of color, need long-term regional mobility and multi-modal connectivity as called for in the Washington State Growth Management Act (Revised Code of Washington 36.70A.108).
- Regional and local plans call for increased residential and/or employment density at and around high-capacity transit stations, and increased options for multi-modal access. VISION 2050 has a goal for 65 percent of the region's population and 75 percent of the region's employment to occur in the regional growth centers and within walking distance of transit.
- Environmental and sustainability goals of the state and region, as established in Washington state law and embodied in Puget Sound Regional Council's VISION 2050 and 2018 Regional Transportation Plan, include reducing greenhouse gas emissions by prioritizing transportation investments that decrease vehicle miles traveled.

[1] Puget Sound Regional Council's VISION 2050 anticipates population and employment in the Puget Sound region will continue to grow over the next 30 years. The current long-range growth forecasts from Puget Sound Regional Council inform elements of the Draft Environmental Impact Statement analyses, such as ridership forecasts, projected vehicle trips and non-motorized activities. Puget Sound Regional Council acknowledges that the current pandemic may have effects on the economy that could alter long-range forecasts. Puget Sound Regional Council's next regional forecast is expected no earlier than 2023. For the purposes of this Draft Environmental Impact Statement, Puget Sound Regional Council's current forecasts are applied to the analysis.

Link light rail train at platform

VISION 2050 on COVID-19 and the Continuing Importance of Transit

Over the last decade, transit ridership has experienced robust growth, with the central Puget Sound region being one of only four regions across the country with consistent growth in transit boardings. While COVID-19 has caused sudden and dramatic drops in transit ridership and revenue and has perhaps accelerated the acceptance of remote work environments, transit will continue to be a critical element for mobility as the region grows over the next 30 years.

The region's historic investment in transit, and continued investments across modes, are critical due to the increases in congestion and travel delay seen in the region over the past decade. Since 2010, the region has grown by over 440,000 residents and 381,000 jobs. Prior to the COVID-19 pandemic, delay on the region's freeway corridors had increased more than 50 percent since 2014, and the average travel time to work had continued to steadily increase across all modes, averaging around 30 minutes. Notably, the share of commuters with travel times over 60 minutes increased steeply and was higher than the share of commuters with travel times less than 10 minutes.

ES.2.3. West Seattle and Ballard Link Extensions Project Meets the Need

Seattle has experienced unprecedented growth over the past two decades. As a result, rapid population and job growth has strained transportation resources in the WSBLE Project corridor. Because of the projected continuation of growth, along with increasing roadway congestion and the limitations on expanding the capacity of the surface transportation network, there is a need for future investments in high-capacity transit systems to serve future transit needs in the project corridor.

The greater Seattle region has experienced a year-over-year average growth rate between 2.3 and 2.8 percent. Many people commute to Seattle and King County from outside the county in the greater Sound Transit service area, where housing is more affordable. According to census data, workers who commute from outside of the county fill approximately 34 percent of jobs (455,000 jobs) in King County (United States Census Bureau 2019[2]). This trend is likely to continue as employment forecasts suggest strong job growth between 2020 and 2040. According to Puget Sound Regional Council, Seattle expects an increase of 20 percent in population and 25 percent in employment between 2015 and 2040, which would add about 135,000 people and about 150,000 jobs to the city (Puget Sound Regional Council 2018b). The WSBLE Project corridor is projected to grow by 47 percent in population and 30 percent in employment during the same timeframe.

Under the No Build Alternative, the Downtown Seattle surface transit system would continue to struggle to accommodate more growth because of roadway congestion and the difficulty in acquiring new right-of-way for dedicated transit infrastructure. The King County Metro Transit (Metro) RapidRide C Line between Westlake Station and the West Seattle Junction (Fauntleroy Way Southwest and Southwest Alaska Street) currently takes an average of 22 minutes during peak periods. Increasing congestion would increase transit travel times to 30 minutes on average during peak periods with the No Build Alternative. In comparison, the Build Alternatives would provide service from the Alaska Junction Station to Westlake Station in 16 minutes. Similarly, the RapidRide D Line route between Ballard and Downtown Seattle (Westlake Station) currently takes an average of 30 minutes during peak periods but would increase to 40 minutes during the peak periods due to congestion. Strong demand and limited system capacity have led Metro to identify the relief of overcrowding as its number one investment priority. Further, increased ridership and employment growth will increase operational frequency needed in the existing Downtown Seattle Transit Tunnel. Sound Transit and the City of Seattle recognized these capacity constraints and the need for a new Downtown Seattle Transit Tunnel as a high priority for Sound Transit 3 investment (City of Seattle 2016).

Currently, Interstate 5, State Route 99, and main arterial streets suffer from chronic congestion, even outside of peak travel periods. Without the West Seattle Link and Ballard Link extensions, increasing roadway congestion will further degrade transit performance and reliability in the project corridor. The surface transit system would continue to struggle to accommodate more growth. Most roadways in the project corridor cannot be expanded to accommodate the increasing demand for dedicated transit infrastructure without substantial property acquisitions because of limited right-of-way.

In addition, transportation costs continue to rise. Tolls are being implemented on major freeways in the region, such as State Routes 99, 520, and 167 and Interstate 405. While the price of fuel fluctuates, it generally increases over time. Parking in the downtown core of Seattle is also a substantial transportation cost. During a typical work day, parking costs range from about $15 per day to about $35 per day. During special events, parking costs increase substantially. All these expenses increase burdens on low-income residents and impede access to employment, educational opportunities, and health-care services. Effective transit can help avoid or reduce the expense of automobile ownership and provide critical access to economic opportunity for disadvantaged populations.

There is a need for investments in high-capacity transit systems to serve future transit needs in the project corridor. The WSBLE Project, which includes a new Downtown Seattle light rail tunnel, would help fulfill this need. The WSBLE Project would help fulfill plans for the corridor that have been envisioned since the 1990s. More recent studies were completed between 2008 and 2016 as part of Sound Transit 3 planning. Providing high-capacity transit was called for by Puget Sound Regional Council and Sound Transit plans, and financing for the WSBLE Project was approved by voters in 2016 as part of the Sound Transit 3 Plan of regional transit system investments.

The WSBLE Project would improve access to employment and educational opportunities for low-income populations and communities of color around the region. The WSBLE Project corridor contains major regional employment opportunities, including some of the largest employers in the region such as Amazon, Starbucks, City and County government, Expedia, and hospitals and medical offices on First Hill in addition to many smaller companies concentrated in Downtown Seattle. The corridor also includes (currently or under construction) regional light rail connections to the University of Washington, Northgate, Bellevue, and Redmond, which have other large education and employment centers. WSBLE would connect employment opportunities in Downtown Seattle to existing light rail lines and light rail extensions currently under construction in King, Pierce, and Snohomish counties, where more affordable housing is available.

The WSBLE Project is expected to reduce dependency on single-occupancy vehicles, slow down growth in vehicle miles traveled, conserve energy, and reduce greenhouse gas emissions. The project is expected to reduce daily vehicle miles traveled by approximately 115,000 by 2042, helping to achieve Washington state's goals for reducing vehicle miles traveled and greenhouse gas emissions. Washington state law sets goals to decrease the annual per capita vehicle miles traveled by 30 percent by 2035 and 50 percent by 2050.

FTA and Sound Transit acknowledge the current impacts of the recent social response to the Coronavirus (COVID-19) and the resulting decline in travel demand. At this time, it is impossible to predict future changes to the project purpose and need, schedule, and impacts that may result from a COVID-19 response of an unpredictable nature and length. Should substantial changes in the planning assumptions, project schedule, project scope, or surrounding project environment result because of a prolonged COVID-19 response, FTA and Sound Transit will consider additional project evaluation and public input consistent with NEPA and SEPA.

Entrance to underground U District Station

[2] At the time of publication, complete 2020 Census data were not available.

Bus transfer area at Northgate Station

ES.3 Alternatives Considered

This Draft Environmental Impact Statement compares the environmental effects of the Build Alternatives (light rail) for the WSBLE Project and a No Build Alternative, which considers the transportation system and the environment as they would exist if the project was not built. The No Build Alternative also provides a baseline against which to measure the impacts of the Build Alternatives. The alternatives were defined by the Sound Transit Board of Directors (Board) after early scoping, the Alternatives Development process, scoping, and public and agency input, which considered a wide range of alternatives. Following the Board motions in May and October 2019, Sound Transit continued to refine the conceptual design of the alternatives for evaluation in the Draft Environmental Impact Statement. This resulted in the addition of some refined alternatives and design options (refer to Chapter 2, Alternatives Considered, and Appendix M, Summary of Alternatives Development and Initial Assessment Process, for additional information).

Preferred Alternative

A preferred alternative is a statement of preference for alternatives based on currently available information. It is not a decision on the project to build.

In 2019, the Board identified preferred alternatives for the majority of the West Seattle Link Extension and the Ballard Link Extension. The Board did not identify a preferred alternative in the Chinatown/International District Segment. The Board is not bound by its identification of a preferred alternative. After completion of the Draft Environmental Impact Statement and public comment, the Board will confirm or modify the preferred alternative for evaluation in the Final Environmental Impact Statement. However, the Board will not make a final decision on the WSBLE Project to be built until after completion of the Final Environmental Impact Statement. At that time, the Board can select from any of the alternatives in the Environmental Impact Statement.

When the Sound Transit Board identified alternatives for study in the Draft Environmental Impact Statement, early cost estimates indicated that some alternatives could require additional funding; that is, funding beyond what was assumed in the Sound Transit 3 financing plan. Alternatives requiring additional funding incorporate enhancements to the scope of the Sound Transit 3 Representative Project identified in the Sound Transit 3 Plan, such as tunnels in West Seattle and alternatives in the Chinatown/International District that require replacement of the 4th Avenue South Viaduct. The additional funding for these alternatives would need to come from contributions from partner agencies outside of Sound Transit, such as the City of Seattle, the FTA, or others. These alternatives anticipated to require "third-party" funding are identified with an asterisk (*) throughout the Draft Environmental Impact Statement.

In identifying preferred alternatives for evaluation in the Draft Environmental Impact Statement, the Board sometimes identified both a "preferred alternative" and "a preferred alternative with third-party funding." For the Final Environmental Impact Statement, Board identification of a preferred alternative that requires additional funding based on current cost estimates would be contingent on identifying funding to cover the gap in cost compared to the preferred alternatives within the scope of the Sound Transit 3 Plan.

Asterisk (*) Use

At the time the Sound Transit Board identified alternatives for study in the Draft Environmental Impact Statement, some alternatives were anticipated to require third-party funding based on early cost estimates. The asterisk (*) identifies these alternatives and the alternatives that would only connect to these alternatives in adjacent segments. Example: the Preferred Dakota Street Station Lower Height Alternative* (Preferred Alternative DEL-2a*).

Due to steeply rising real estate prices and other construction expenses, Sound Transit projects currently in early planning and design, including the West Seattle and Ballard Link Extensions project, are seeing substantial cost estimate increases. To ensure that funding remains available to complete all voter-approved projects, the Board conducted a "realignment" process that established a schedule that is affordable, using current financial projections and cost estimates to set the general order in which projects will advance. This "affordable" schedule established an approach to prioritize, fund, and manage program work over time (Resolution 2021-05). In addition, the Board adopted a "target" schedule for priority projects, as close to Sound Transit 3 Plan schedules as possible, reliant upon reductions in the affordability gap. To reduce the affordability gap, Sound Transit will pursue expanded financial capacity (Motion M2020-37); develop and implement a cost savings plan; identify cost savings for the Sound Transit budget outside of the capital program; identify opportunities to reduce cost and planning delays; and engage project stakeholders in discussions to address the trade-offs between project scope, schedule, and new financial resources to inform Board decision-making on project schedule.

Based on realignment, the West Seattle Link Extension would begin operations in 2032 under the both the affordable and target schedules. The Ballard Link Extension is anticipated to begin operations in 2037 under the target schedule. Under the affordable schedule, the Ballard Link Extension from SODO to Smith Cove Station is anticipated to begin operation in 2037, and from Smith Cove Station to Ballard Station in 2039. The affordable schedule would implement the West Seattle and Ballard Link Extensions Minimum Operable Segment (M.O.S.) as described below and in Chapter 2, Alternatives, Section 2.4.2.1, West Seattle and Ballard Link Extensions Minimum Operable Segment.

ES.3.1. Build Alternatives

This section describes the Build Alternatives (and design options) for the WSBLE Project. The WSBLE Project consists of two extensions: the West Seattle Link Extension and the Ballard Link Extension. Each extension is broken into smaller geographic areas called segments (Figure ES-4). The West Seattle Link Extension has four segments, and the Ballard Link Extension has five segments. Both Link extensions would have improvements in the SODO Segment. The light rail alternatives include elevated, at-grade, retained cut, and tunnel light rail profiles and stations.

The West Seattle Link Extension would start service in 2032, initially providing service between a new station in SODO and an Alaska Junction Station. In 2037, the Ballard Link Extension would start service between SODO Station on the existing light rail line and the Smith Cove Station. Service to Ballard Station would open in 2037 under the target schedule and 2039 under the affordable schedule. Service on the Ballard Link Extension would continue south to the Tacoma Dome Station using the existing Central Link light rail line. The Ballard Link Extension would also permanently connect the West Seattle Link Extension tail tracks to the existing Central Link light rail line, allowing West Seattle riders to continue north to Lynnwood and eventually to Everett. More information on the alternatives and design options and how they connect can be found in Section 2.1.2, Build Alternatives, of Chapter 2, Alternatives Considered.

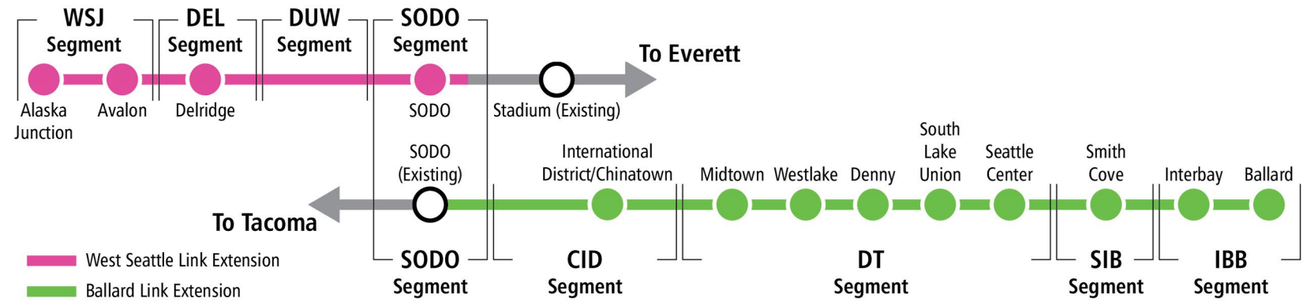
Numbering WSBLE Project Alternatives and Design Options

WSBLE Project alternatives are designated by segment. The West Seattle Link Extension has four segments and corresponding abbreviations: SODO (SODO), Duwamish (DUW), Delridge (DEL), and West Seattle Junction (WSJ). The Ballard Link Extension has five segments and abbreviations: SODO (SODO), Chinatown-International District (CID), Downtown (DT), South Interbay (SIB), and Interbay/Ballard (IBB). A portion of the SODO Segment occurs in both extensions. Each alternative is designated by segment, name, and number, which describe the location and nature of the alternative. Some alternatives have design options and use the letter "a" to identify the alternative and the letter "b" to identify the design option. For example, the At-Grade Alternative (SODO-1a) is the alternative, and the At-Grade South Station Option (SODO-1b) is the design option for that alternative. The project includes design options for alignments and stations. An alignment option refers to a different profile or location of a portion of the alternative. Station options include alternative locations for stations, but the options for a station generally would have the same station characteristics and serve the same population.

ES.3.1.1. West Seattle Link Extension

The West Seattle Link Extension (Figure ES-5) would begin south of South Holgate Street and include a new SODO Station that would allow for transfers with the existing SODO Station on the existing Central Link light rail line. The West Seattle Link Extension would travel south from the

Figure ES-4. West Seattle and Ballard Link Extensions Segments and Stations



SODO Station across South Lander Street either at-grade or on an elevated guideway and continue south towards South Spokane Street on an elevated guideway. In the vicinity of South Spokane Street, it would turn west on a new elevated structure either north or south of the existing West Seattle Bridge, where it would cross the Duwamish Waterway (also known as the Duwamish River) on a high-level fixed bridge structure. On the west side of the Duwamish Waterway, the guideway would remain mostly elevated to the west side of the Delridge valley. In the West Seattle Junction area, the guideway could be elevated or in a tunnel. A tunnel in West Seattle was not included in the Sound Transit 3 Plan (Sound Transit 2016); therefore, third-party funding may be needed for alternatives that include tunnels. Three stations would be constructed in West Seattle: Delridge, Avalon, and Alaska Junction.

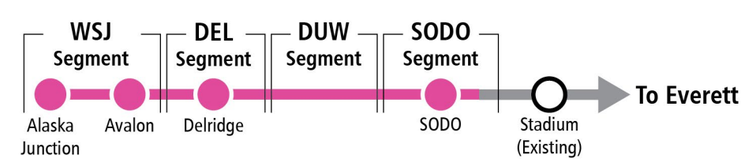
The WSBLE Project would have two potential minimum operable segments (M.O.S.'s): one from the SODO Station to Delridge Station on the West Seattle Link Extension and from SODO Station to Smith Cove Station on the Ballard Link Extension (the West Seattle and Ballard Link Extensions M.O.S.), and one from the SODO Station to the Smith Cove Station on the Ballard Link Extension (the Ballard Link Extension-only M.O.S.). The West Seattle and Ballard Link Extensions M.O.S. includes the West Seattle Link Extension from just north of the proposed new SODO Station to the Delridge Station in West Seattle. The tail track for this M.O.S. would extend approximately 500 feet southwest of the Delridge Station. This M.O.S. also includes a portion of the Ballard Link Extension from the SODO Station to the Smith Cove Station. This M.O.S. would cost between $9.3 and $10.3 billion, depending on the alternatives included. This M.O.S. can be applied to all West Seattle and Ballard Link Extensions alternatives. The Delridge Station was identified as the terminus for the M.O.S. in West Seattle because it would be the first station in the West Seattle area and would provide an opportunity for transit integration for areas to the south (White Center, Burien) as well as the rest of the West Seattle peninsula. The Ballard Link Extension-only M.O.S. would have limited improvements in the Duwamish Segment, where it would connect with the existing Operations and Maintenance Facility Central. See Chapter 2, Alternatives Considered, for additional information.

Minimum Operable Segment

A minimum operable segment (M.O.S.) is defined by the Federal Transit Administration as "a segment of the Locally Preferred Alternative that provides the most cost-effective solution with the greatest benefits for the project. The M.O.S. must be able to function as a standalone project and not be dependent on any future segments being constructed" (FTA 2008). The end-of-line station under an M.O.S. is also considered an interim terminus because it is assumed that the project would be fully built out at a later date.

The following sections describe the alternatives and design options for the West Seattle Link Extension by segment. The West Seattle Link Extension has a total of 15 alternatives (several of which have design options); 5 of the alternatives are preferred, and 2 of the alternatives and 1 of the design options are preferred with third-party funding. As not all alternatives can connect to every alternative in adjacent segments due to variations in the alignment and profile of the alternatives, possible connections are identified. These sections also summarize the potential key environmental impacts of the alternatives. More detailed information about the impacts associated with each of the alternatives can be found in Chapter 3, Transportation Environment and Consequences, and Chapter 4, Affected Environment and Environmental Consequences.

Figure ES-5. West Seattle Link Extension Segments and Stations



ES.3.1.1.1. SODO Segment

The SODO Segment includes the area between approximately South Holgate Street and South Forest Street in the SODO neighborhood within the Duwamish Manufacturing/Industrial Center. There are two alternatives and one design option, all of which follow the SODO busway.

Figure ES-6. SODO Segment, West Seattle Link Extension - Preferred At-Grade Alternative (SODO-1a)

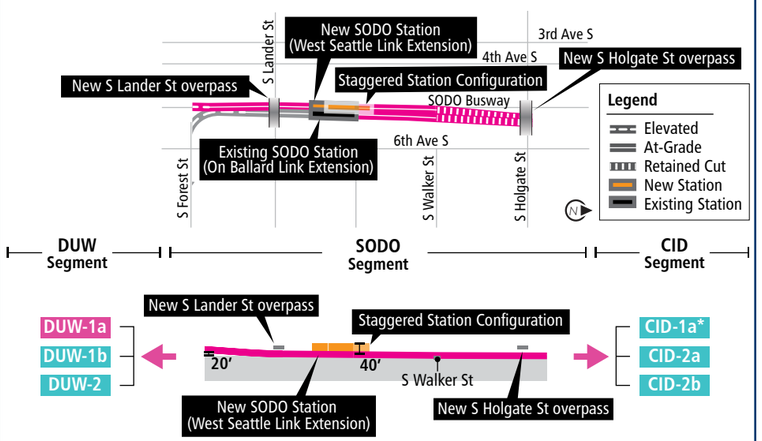
Preferred At-Grade (SODO-1a)

Alignment: The West Seattle Link Extension would begin just north of the existing SODO Station and travel at-grade west of and parallel to the existing Link light rail line in the SODO Busway. It would continue south at-grade under South Lander Street, which would be reconstructed as an overpass over the new and existing light rail. It would transition to an elevated guideway south of South Lander Street.

The Ballard Link Extension would permanently connect the West Seattle Link Extension tracks north of the SODO Station to the existing Link light rail line. The connection would begin north of the new SODO Station and continue north, in a retained cut under South Holgate Street, which would be reconstructed as an overpass over the new and existing light rail. The overpass would remove the need for traffic to stop for light rail trains, the frequency of which would increase with the combination of both the existing and new light rail lines.

Station: New SODO Station (constructed as part of the West Seattle Link Extension): At-grade, immediately west of the existing SODO Station.

Preferred Alternative SODO-1a also has a staggered station configuration that was developed in order to avoid property owned by the United States Postal Service at 4th Avenue South and South Lander Street. This property is the location of the Carrier Annex and Distribution Center/ Terminal Post Office (Carrier Annex/Terminal Post Office). The staggered station configuration features a narrowed center platform and staggered side platforms, with the southbound platform shifted slightly north so that it is not on the Carrier Annex/Terminal Post Office property. The existing driveway at the Carrier Annex/Terminal Post Office facility's southern access point would be connected under the new South Lander Street overpass to 4th Avenue South, which then maintains access to South Lander Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

One alternative and one design option are at-grade and transition into a retained cut. The other alternative is elevated, transitioning to at-grade.

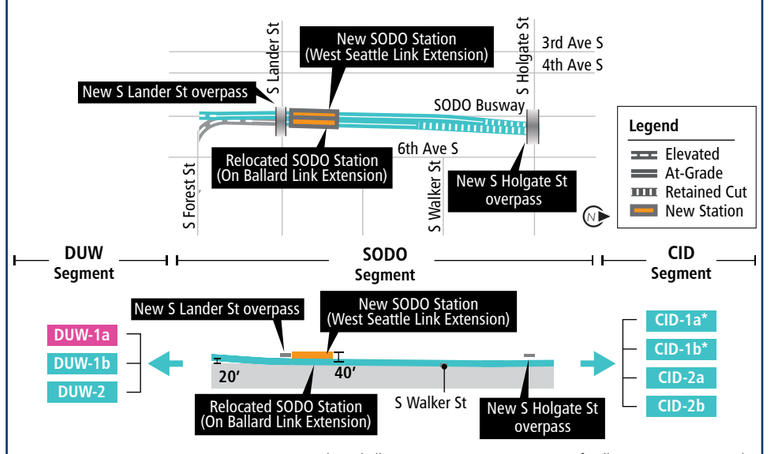
This segment would have one station, the SODO Station. There is an existing SODO light rail station, and a new SODO Station is proposed as part of the West Seattle Link Extension. The new SODO Station on the West Seattle Link Extension would provide a transfer point to/from the Ballard-to-Tacoma light rail line via the existing SODO Station, and the two stations would therefore function as one SODO Station. Until the Ballard Link Extension is operational, riders from West Seattle would need to disembark at the SODO Station and transfer to the existing light rail system to travel north to Lynnwood or south to Tacoma Dome or use another mode to reach their destination. One alternative and one design option include relocation of the existing SODO Station.

Figure ES-7. SODO Segment, West Seattle Link Extension - At-Grade South Station Option (SODO-1b)

At-Grade South Station Option (SODO-1b)

Alignment: Same as Preferred Alternative SODO-1a.

Station: SODO Station (constructed as part of the West Seattle Link Extension): At-grade, west of and 200 feet south of the existing at-grade SODO Station, just north of South Lander Street. The existing SODO Station would be relocated 200 feet south of its current location, adjacent to the new SODO Station. The guideway would continue north under the new roadway overpass of South Holgate Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

The SODO Segment includes improvements for both the West Seattle Link Extension and the Ballard Link Extension, and the summary of impacts related to this segment is provided in the subsection below for both the West Seattle Link Extension and Ballard Link Extension. This allows a comparison of this segment's alternatives as a whole and captures the combined impacts in this segment for both Link extensions. Figures ES-6, ES-7, and ES-8 show the SODO Segment alternatives and their connections with alternatives in adjacent segments. The pink color is used for preferred alternatives, and blue is used for other alternatives. The figures also show the SODO Segment alternatives in plan view and in profile view. Figure ES-9 shows the three alternatives side by side.

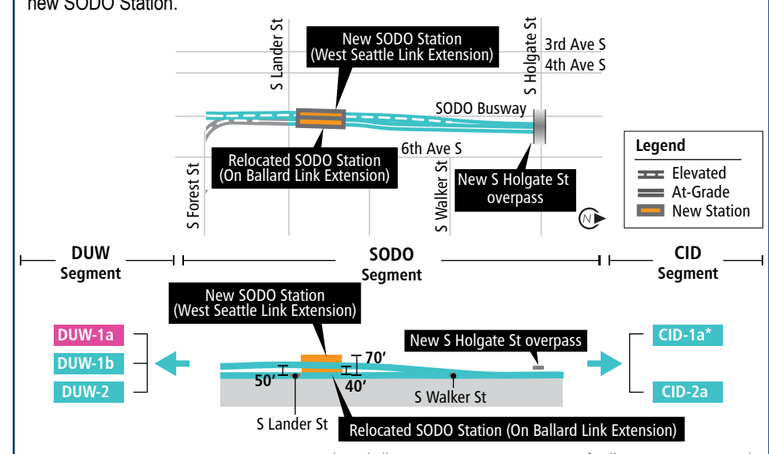
Figure ES-8. SODO Segment, West Seattle Link Extension - Mixed Profile Alternative (SODO-2)

Mixed Profile (SODO-2)

Alignment: The West Seattle Link Extension would begin just north of the existing SODO Station and travel at-grade west of and parallel to the existing Link light rail line in the SODO Busway. The guideway would transition to an elevated profile at South Walker Street and continuing south over South Lander Street. The SODO Busway would be relocated to the west of the new rail line.

The Ballard Link Extension would permanently connect the West Seattle Link Extension tracks north of the SODO Station to the existing Link light rail line. The connection would begin north of the new SODO Station and continue north, at-grade under South Holgate Street, which would be reconstructed as an overpass over the new and existing light rail.

Station: SODO Station (constructed as part of the West Seattle Link Extension): Elevated north of South Lander Street, west of and 200 feet south of the existing SODO Station. The existing SODO Station would be relocated 200 feet south of its current location, adjacent to the new SODO Station.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Comparison of SODO Segment Alternatives

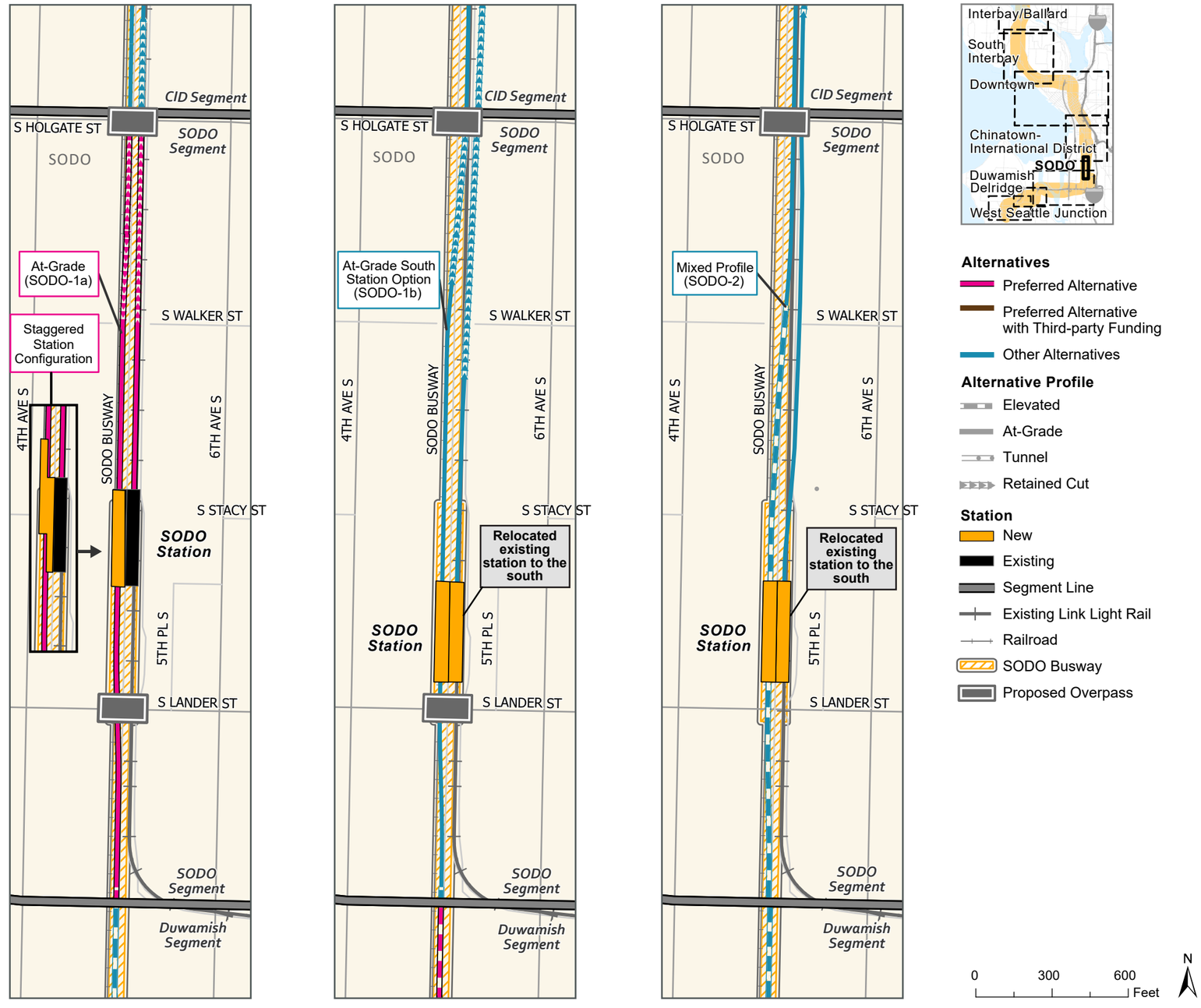
Table ES-1 and the following text summarize key operational (i.e., long-term permanent) and construction impacts of the SODO Segment alternatives.

Preferred Alternative SODO-1a and Option SODO-1b would reconstruct South Lander Street as a roadway overpass over the existing and new light rail tracks. This overpass is not included with Alternative SODO-2, where the existing at-grade crossing of light rail tracks would remain. The South Lander Street overpass would improve truck and automobile mobility by eliminating conflict and delay with the existing light rail crossings. All alternatives would reconstruct South Holgate Street as a roadway overpass. Construction closures would be coordinated so that South Lander Street and South Holgate Street are not closed simultaneously.

For Preferred Alternative SODO-1a and Option SODO-1b, the SODO Busway would be permanently closed to buses. Routes coming from the south would use adjacent streets (4th Avenue South or 6th Avenue South) to access the Metro Ryerson and Atlantic/Central bus bases. The SODO Busway would remain open with Alternative SODO-2 during project operations, but it would be closed for approximately 10 years during construction because it would be closed for construction of both the West Seattle and Ballard Link Extensions.

Link light rail train approaching the existing SODO station

Figure ES-9. Segment Alternatives, West Seattle and Ballard Link Extensions



Source: City of Seattle, King County (2019, 2020, 2021).

All alternatives include a full closure of the existing Link light rail tracks between the SODO and International District/Chinatown stations for 6 to 7 weeks during construction, when connecting to Alternative CID-1a*. When connected with other alternatives in the Chinatown-International District Segment, there would be intermittent periods of single-track operation and closures during nights and weekends.

Option SODO-1b and Alternative SODO-2 would require relocation of the United States Postal Service Carrier Annex and Distribution Center/ Terminal Post Office at 4th Avenue South and South Lander Street. Preferred Alternative SODO-1a would acquire part of this facility (a portion of the surface parking), which the United States Postal Service has indicated would require relocation of the facility. Relocation of the facility could be challenging due to its size, functions, and the service area that it would need to be within. The staggered station configuration for Preferred Alternative SODO-1a would avoid permanent impacts (i.e., operation and maintenance) to the United States Postal Service facility. Accordingly, this station configuration would not require relocation of the facility.

All alternatives would require relocation of a 230-kilovolt power line from the SODO Busway to 6th Avenue South.

Table ES-1. Key Environmental Impacts of the SODO Segment Alternatives, West Seattle and Ballard Link Extensions

Resource Impact Measure	Preferred At-Grade Alternative (SODO–1a) and Staggered Station Configuration	At-Grade South Station Option (SODO-1b)	Mixed Profile Alternative (SODO-2)
Cost	500 to 700 M [a]	600 to 700 M [b]	800 M
Ridership (daily boardings) [c]	14,600	14,600	14,600
Operational Transportation Impacts	0 intersections impacted. Eliminate existing at-grade conflicts at South Lander Street and South Holgate Street. Permanent closure of SODO Busway.	0 intersections impacted. Eliminate existing at-grade conflicts at South Lander Street and South Holgate Street. Permanent closure of SODO Busway.	0 intersections impacted. Eliminate existing at-grade conflicts at South Holgate Street. SODO Busway reopens, following construction.
Construction Transportation Impacts	Full closure of South Lander Street (2 years) and South Holgate Street (2 to 3 years). Detour a portion of the SODO trail. Link light rail closure connecting to Alternative CID-1a*.	Full closure of South Lander (3 years) Street and South Holgate Street (2 to 3 years). Detour a portion of the SODO trail. Link light rail closure connecting to Alternative CID-1a*.	Full closure of South Holgate Street (3 years) and the SODO Busway (10 years). Detour a portion of the SODO trail. Link light rail closure connecting to Alternative CID-1a*.
Potential Displacements	Businesses: 19 to 32 [d] Employees: 150 to 280 [d]	Businesses: 17 to 29 Employees: 150 to 240	Businesses: 23 Employees: 210

[a] Low end of the range reflects cost of the Preferred Alternative SODO-1a (staggered station configuration) connecting to Alternative CID-1a*. High end of the range reflects Preferred Alternative SODO-1a (without the staggered station configuration, which includes the relocation of the United States Postal Service facility) connecting to Alternative CID-2a and Option CID-2b.

[b] Low end of the range reflects connecting to Alternative CID-1a*.

[c] Ridership numbers are for 2042 after the Ballard Link Extension would be operational. The ridership is the total for the new and existing SODO stations.

[d] The range reflects the connection to the Chinatown-International District Segment and that the staggered station configuration would avoid relocation of the United States Postal Service facility.

Existing SODO Station

ES.3.1.1.2. Duwamish Segment

The Duwamish Segment includes the area between South Forest Street in the SODO neighborhood and the intersection of Southwest Charlestown Street and Delridge Way Southwest in the Delridge neighborhood. There are two alternatives and one design option, which are mostly elevated and include a bridge over the Duwamish Waterway. The location of the bridge varies by alternative and design option. Figures ES-10, ES-11, and ES-12 show the Duwamish Segment alternatives, and their connections with alternatives in adjacent segments. The pink color is used for preferred alternatives, brown is used for preferred alternatives with third-party funding, and blue is used for other alternatives. The figures also show the Duwamish Segment alternatives in plan view and in profile view. This segment does not include a station, but does include a connection to the existing Central Operations and Maintenance Facility. The Duwamish Segment alternatives are shown together on Figure ES-13.

Aerial view of the Duwamish Waterway and Harbor Island

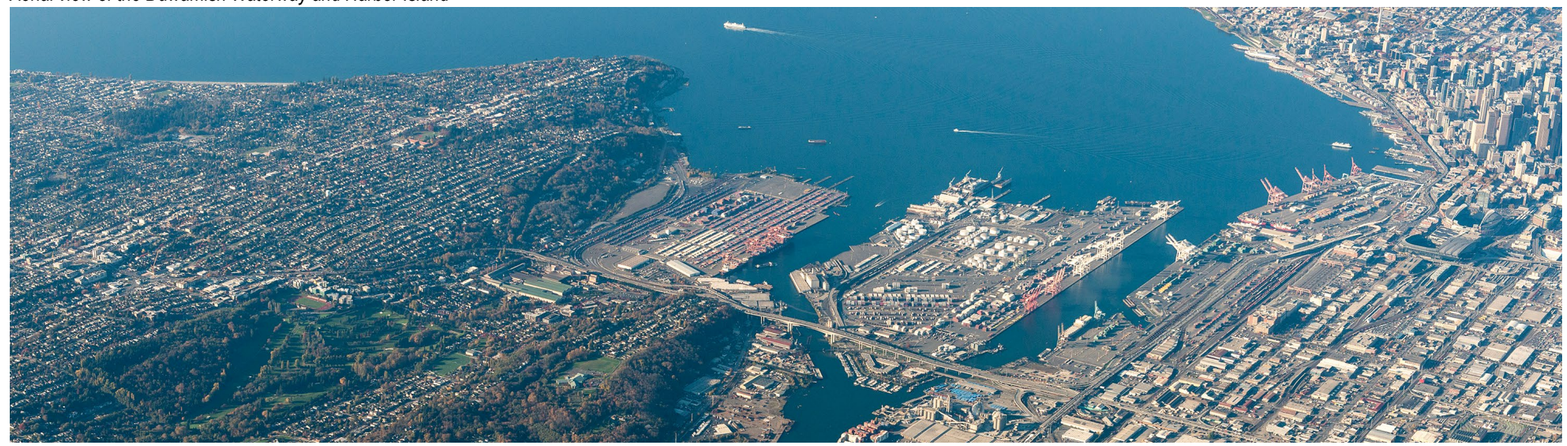


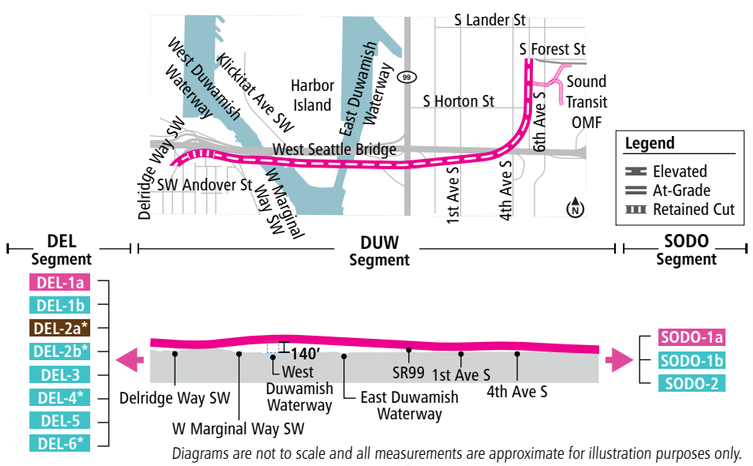
Photo Credit: Port of Seattle, http://www.portseattle.org

Figure ES-10. Duwamish Segment - Preferred South Crossing Alternative (DUW-1a)

Preferred South Crossing (DUW-1a)

Alignment: Elevated along the west side of the existing light rail line, south from South Forest Street; continuing southwest to cross over to the south side of the Spokane Street Bridge and the West Seattle Bridge. The height of the bridge could be adjusted through coordination with the United States Coast Guard. The guideway would continue west and to the south side of the West Seattle Bridge, crossing over the Duwamish Waterway and Harbor Island on a new high-level fixed bridge. The guideway would then cross the northern edge of Pigeon Point in a combination of elevated guideway and retained cut-and-fill; turning southwest on an elevated structure that follows Delridge Way Southwest.

Station: None.



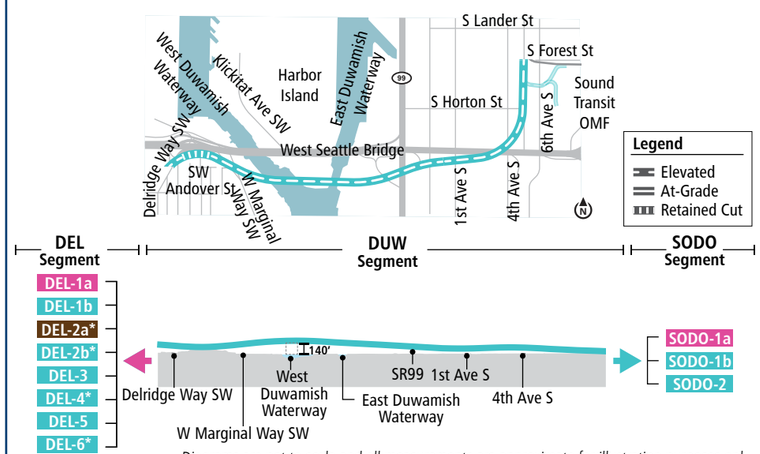
Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DEL-1a is shown for illustration purposes.

Figure ES-11. Duwamish Segment - South Crossing South Edge Crossing Alignment Option (DUW-1b)

South Crossing South Edge Crossing Alignment Option (DUW-1b)

Alignment: Same as the South Crossing Alternative except it would cross the Duwamish Waterway at a location farther south, over the southern edge of Harbor Island. The height of the bridge could be adjusted through coordination with the United States Coast Guard.

Station: None.



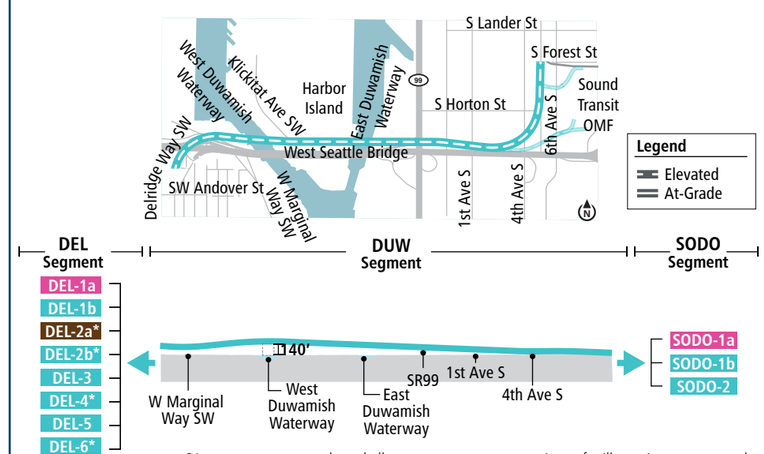
Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DEL-1a is shown for illustration purposes.

Figure ES-12. Duwamish Segment - North Crossing Alternative (DUW-2)

North Crossing (DUW-2)

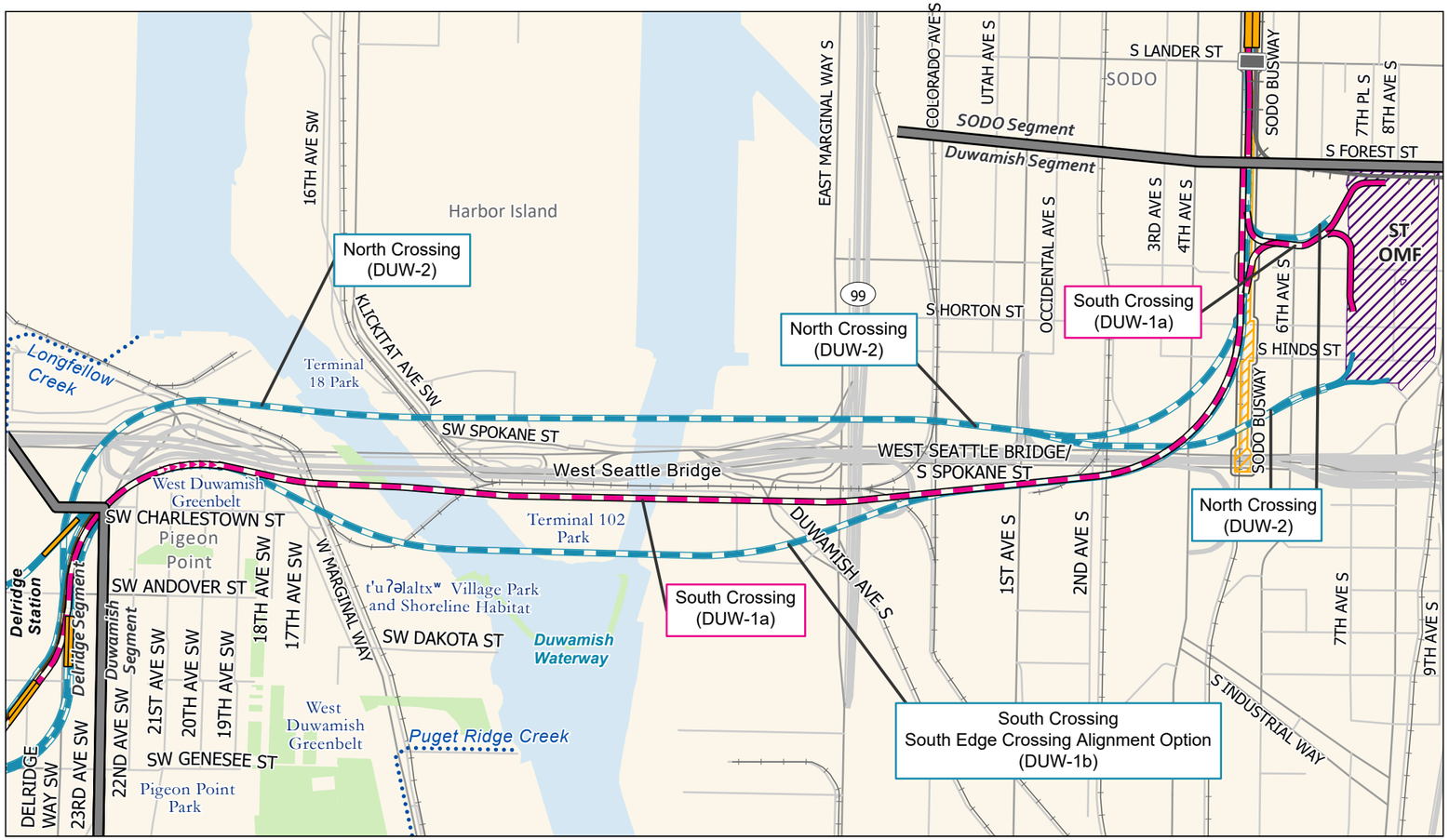
Alignment: Elevated along the west side of the existing light rail line south from South Forest Street; continuing west on a new high-level fixed bridge north of the existing West Seattle Bridge, crossing the West Duwamish Waterway. The height of the bridge could be adjusted through coordination with the United States Coast Guard. The guideway would cross over the West Seattle Bridge and associated ramps, continuing south on the west side of Delridge Way Southwest.

Station: None.



Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DEL-1a is shown for illustration purposes.

Figure ES-13. Duwamish Segment Alternatives, West Seattle Link Extension

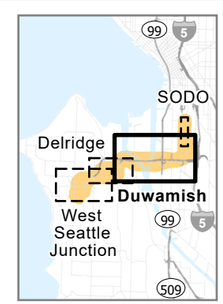


Source: City of Seattle, King County (2019, 2020, 2021).

Alternatives
- Preferred Alternative
- Preferred Alternative with Third-party Funding
- Other Alternatives

Alternative Profile
- Elevated
- At-Grade
- Tunnel
- Retained Cut

Station
- New
- Existing
- Segment Line
- Existing Link Light Rail
- Railroad
- SODO Busway
- Proposed Overpass
- Sound Transit Operations and Maintenance Facility (ST OMF)
- Piped Stream
- Park



0 800 1,600 Feet

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Comparison of Duwamish Segment Alternatives

Table ES-2 and the following text summarize the key environmental impacts of the Duwamish Segment alternatives.

Preferred Alternative DUW-1a and Option DUW-1b would have greater park impacts than Alternative DUW-2. Most of the park impacts would occur in the West Duwamish Greenbelt, which serves as wildlife habitat and visual buffer, and is home to a great blue heron colony. Preferred Alternative DUW-1a and Option DUW-1b would result in the removal of trees in the great blue heron management area. Preferred Alternative DUW-1a would also impact habitat enhancements that may occur at the City of Seattle's Bluefield Holdings/Wildlands Site 2. Alternative DUW-2 would avoid impacts to the greenbelt but could impact the Port of Seattle's proposed habitat restoration site at Terminal 25.

Sound Transit is evaluating multiple bridge types for crossing the Duwamish Waterway. Depending on bridge type, Preferred Alternative DUW-1a and Alternative DUW-2 could potentially avoid placing guideway columns in the water. Option DUW-1b would require guideway columns in the water for all bridge types. There are two Superfund sites with ongoing cleanups that overlap with the project limits in the Duwamish Segment. Sound Transit would coordinate with the United States Environmental Protection Agency and the Washington State Department of Ecology on any potential protective measures or restrictions that might be required for the project. In-water guideway columns would permanently remove in-water (benthic) habitat within waters that are essential fish habitat and critical habitat for listed salmon species. The Muckleshoot Indian Tribe is signatory to both the Treaty of Point Elliott and the Treaty of Medicine Creek. The Muckleshoot Indian Tribe has treaty-protected fishing rights and Usual and Accustomed Areas in the Puget Sound region, which includes the Duwamish Waterway. The Suquamish Tribe of the Port Madison Reservation (Suquamish Tribe) is signatory to the Treaty of Point Elliott and has treaty-protected fishing rights and Usual and Accustomed Areas in the Puget Sound region, which also includes the Duwamish Waterway. Treaty-protected fishing rights and access to Usual and Accustomed Areas of the Muckleshoot Indian Tribe may be temporarily affected during in-water construction or permanently affected by placement of guideway columns in the water. Some bridge types could also impact treaty-protected fishing rights and access to the Usual and Accustomed Areas of the Suquamish Tribe.

All alternatives would maintain the existing horizontal and vertical clearance over the United States Army Corps of Engineers-maintained navigation channel in the West Duwamish Waterway. Alternative DUW-2 would reduce the horizontal and vertical clearance of the United States Army Corps of Engineers-maintained navigation channel in the East Duwamish Waterway, just north of the existing Spokane Street Bridge

restriction. All alternatives would require short-term closures of the navigation channel (of 4 to 12 hours) and could impact vessel movement outside the channel during construction. They would also require additional intermittent closures of part of the navigation channel for up to approximately 4 weeks during construction. Netting and scaffolding under the new guideway bridge during construction of all alternatives would temporarily reduce the vertical clearance on both waterways, and some vessels would not be able to pass under portions of the bridge.

All of the alternatives in this segment would displace businesses (and their employees) that are water-dependent or that support water-dependent businesses, which could be difficult to relocate. Based on available business information, Alternative DUW-2 would displace the most water-dependent businesses. The displacement of these businesses could impair the operations of waterway transportation and shipment of goods. As a result, there could be a broader effect on regional jobs and income than the jobs and businesses displaced directly by the WSBLE Project. Option DUW-1b would permanently displace moorage on the Duwamish Waterway, and all alternatives would temporarily displace moorage during construction. Replacement moorage is unlikely to be found nearby on the Duwamish Waterway and Elliott Bay.

When connected with the Delridge Way Station Alternative (Alternative DEL-3) or the Delridge Way Station Lower Height Alternative (Alternative DEL-4*), Preferred Alternative DUW-1a and Option DUW-1b would require temporary relocation of Fire Station 36 during construction and could potentially require permanent relocation. Alternative DUW-2 would potentially require temporary relocation of parking and training facilities at Fire Station 14 during construction. If these relocations were necessary, Sound Transit would work closely with Seattle Fire Department officials to identify a suitable property within the surrounding area and ensure operations continue with minimal impacts during relocation. Alternative DUW-2 and Option DUW-1b would adversely affect a similar number of historic resources, but Option DUW-1b would have adverse effects to two historic districts. DUW-1a have fewer adverse effects but would also have adverse effects to the two historic districts.

Alternative DUW-2 would temporarily close lanes of Chelan Avenue west of the West Marginal Way/Spokane Street/Chelan Avenue intersection. During construction, increased traffic congestion is expected at this intersection, with short-term lane closures on Chelan Avenue Southwest; however, one lane in each direction would be maintained. The Ballard Link Extension-only M.O.S. would also result in impacts in the Duwamish Segment, as noted in Table ES-2 and described in Section ES.3.1.2.1.

Table ES-2. Key Environmental Impacts of the Duwamish Segment Alternatives

Resource Impact Measure	Preferred South Crossing Alternative (DUW-1a) [a]	South Crossing South Edge Crossing Alignment Option (DUW-1b) [a]	North Crossing Alternative (DUW-2) [a]
Cost	1.2 to 1.3 B	1.3 B	1.5 B
Operational Transportation Impacts	0 intersections impacted.	0 intersections impacted.	0 intersections impacted.
Construction Transportation Impacts	Detour a portion of the Delridge Connector Trail. Closure of the staircase through the West Duwamish Greenbelt.	Detour a portion of the Delridge Connector Trail. Closure of the staircase through the West Duwamish Greenbelt.	Partial closure of Chelan Avenue west of the West Marginal Way/Spokane Street/Chelan Avenue intersection (3 months).
Potential Displacements [b]	Residential: 22 to 26 Business: 35 to 36 Employees: 670 to 680	Residential: 23 to 26 Business: 28 to 29 Employees: 680 to 690	Residential: 0 Business: 38 Employees: 400
Length of Potential Operational Visual Impacts (miles)	0.1	0.1	0
Potential Operational Noise Impacts before Mitigation (all impacts can be mitigated) [b, c]	6 to 10	10 to 12	1
Potential Operational Vibration or Groundborne Noise Impacts before Mitigation (all impacts can be mitigated) [c]	0	0	0
Biodiversity Area Impacts (acres operational/acres construction)	1.5 to 2.2/0.2 to 0.4	1.9/0.6	0/0
In-water (Benthic Surface) Impacts (acres operational/acres construction) [d]	0 to <0.1/0 to 0.5	<0.1 to 0.4/0.6 to 1.0	0 to 0.5/0 to 0.9
Historic Properties and Historic Districts with Adverse Effects [b, e]	6	7	9
Park and Recreational Resources Impacts (acres operational/acres construction)	1.4 to 1.5/0.2 to 0.4	1.8 to 1.9/0.6 to 0.8	0

[a] Ranges reflect differences from connecting to different alternatives in adjacent segments. Cost range is due to Preferred Alternative DUW-1a costing more when connecting to Alternatives DEL-3 and DEL-4*.

[b] The Ballard Link Extension-only M.O.S. would result in some of the impacts identified in this table: one business displacement with five employees, one noise impact (which can be mitigated), and adverse effects to two historic properties.

[c] The numbers presented are the number of units, counted by individual residences, including individual units of multi-family structures, and number of structures for other uses, like schools, churches, and parks.

[d] The ranges shown represent impacts from different bridge types considered.

[e] Potentially adversely affected under Section 106 (to be confirmed through consultation with State Historic Preservation Officer).

ES.3.1.1.3. Delridge Segment

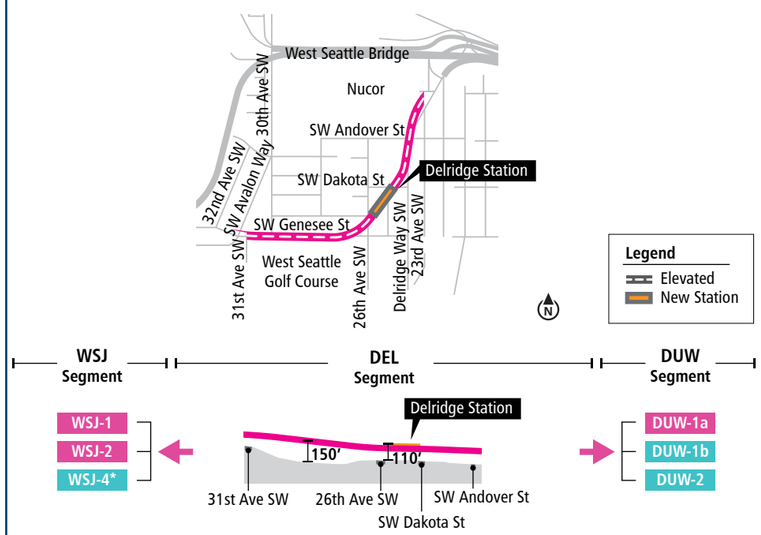
The Delridge Segment includes the area between Southwest Charlestown Street and 31st Avenue Southwest, and has one station, the Delridge Station. There are six alternatives and two design options in this segment. All of the Delridge Segment alternatives and design options are elevated, but four of them are lower height alternatives that enter into a tunnel portal on the west end near the West Seattle Junction Segment. Four of the alternatives generally follow Delridge Way Southwest and Southwest Genesee Street. Two design options are on the north side of Southwest Genesee Street. Two alternatives are further north, near Southwest Andover Street. Figures ES-14 through ES-21 show the Delridge Segment alternatives and their connections with alternatives in adjacent segments. The pink color is used for preferred alternatives, brown is used for preferred alternatives with third-party funding, and blue is used for other alternatives. The figures also show the Delridge Segment alternatives in plan view and in profile view. The Delridge Segment alternatives are shown together on Figure ES-22.

Figure ES-14. Delridge Segment - Preferred Dakota Street Station Alternative (DEL-1a)

Preferred Dakota Street Station (DEL-1a)

Alignment: Elevated along the west side Delridge Way Southwest (except at Southwest Andover Street); continuing south to an elevated station; turning to the west and crossing to the south side of the Southwest Genesee Street right-of-way, north of the West Seattle Golf Course.

Station: Delridge Station - Elevated station south of Southwest Dakota Street, oriented southwest-northeast.



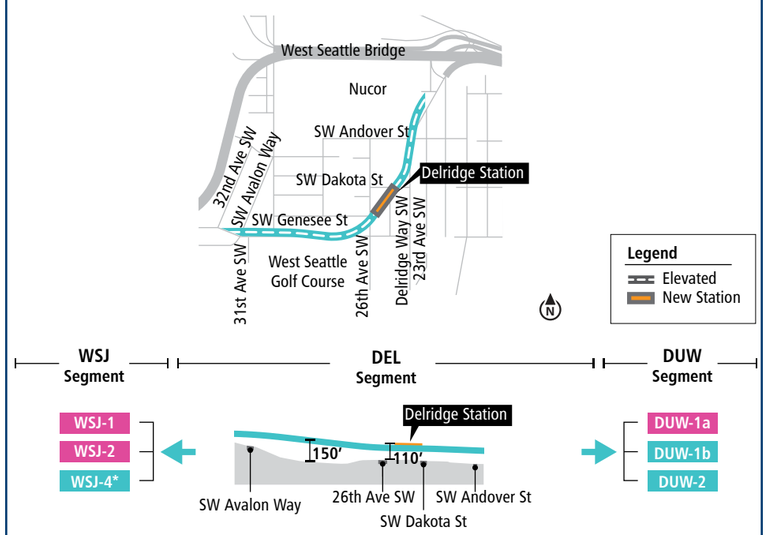
Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DUW-1a is shown for illustration purposes.

Figure ES-15. Delridge Segment - Dakota Street Station North Alignment Option (DEL-1b)

Dakota Street Station North Alignment Option (DEL-1b)

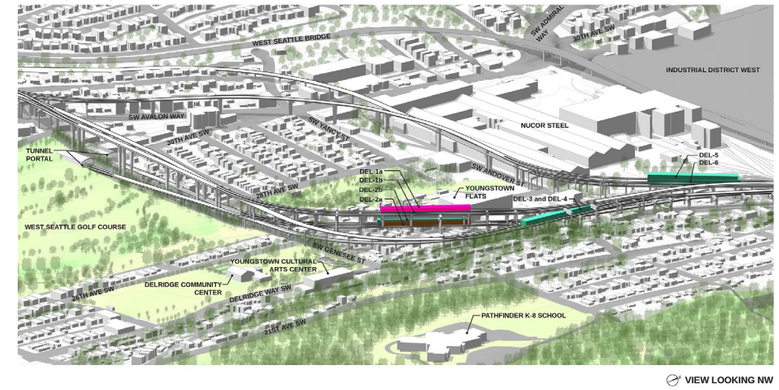
Alignment: Similar to Preferred Alternative DEL-1a, except it would shift to the north side of Southwest Genesee Street west of 28th Avenue Southwest.

Station: Same as Preferred Alternative DEL-1a.



Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DUW-1a is shown for illustration purposes.

Delridge Segment Alternatives 3D Model



Visual Simulation of Preferred Alternative DEL-1a looking east along Southwest Genesee Street from Southwest Avalon Way

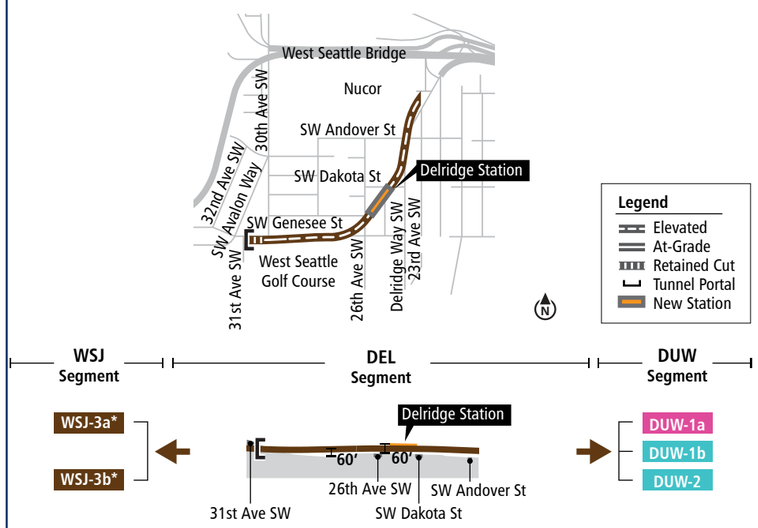
Visual Simulation of Option DEL-1b looking east along Southwest Genesee Street from Southwest Avalon Way

Figure ES-16. Delridge Segment - Preferred Dakota Street Station Lower Height Alternative (DEL-2a)*

Preferred Dakota Street Station Lower Height (DEL-2a)*

Alignment: Elevated along the west side Delridge Way Southwest (except at Southwest Andover Street); continuing south to an elevated station; turning to the west and crossing to the south side of the Southwest Genesee Street right-of-way, north of the West Seattle Golf Course, with a tunnel portal for connecting to tunnel alternatives in the West Seattle Junction Segment in the northwest corner of the West Seattle Golf Course, south of Southwest Genesee Street and east of 31st Avenue Southwest.

Station: Delridge Station – Elevated station south of Southwest Dakota Street, oriented southwest-northeast.



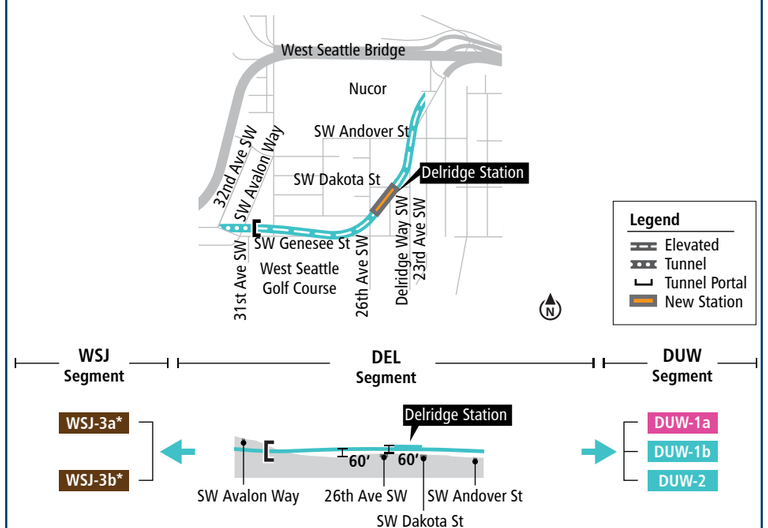
Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DUW-1a is shown for illustration purposes.

Figure ES-17. Delridge Segment - Dakota Street Station Lower Height North Alignment Option (DEL-2b)*

Dakota Street Station Lower Height North Alignment Option (DEL-2b)*

Alignment: Similar to the Preferred Alternative DEL-2a*, except it would shift to the north side of Southwest Genesee Street west of 28th Avenue Southwest, with a tunnel portal north of Southwest Genesee Street, between Southwest Avalon Way and 30th Avenue Southwest.

Station: Same as Preferred Alternative DEL-2a*.



Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DUW-1a is shown for illustration purposes.

Visual Simulation of Preferred Alternative DEL-2a looking east along Southwest Genesee Street from Southwest Avalon Way*

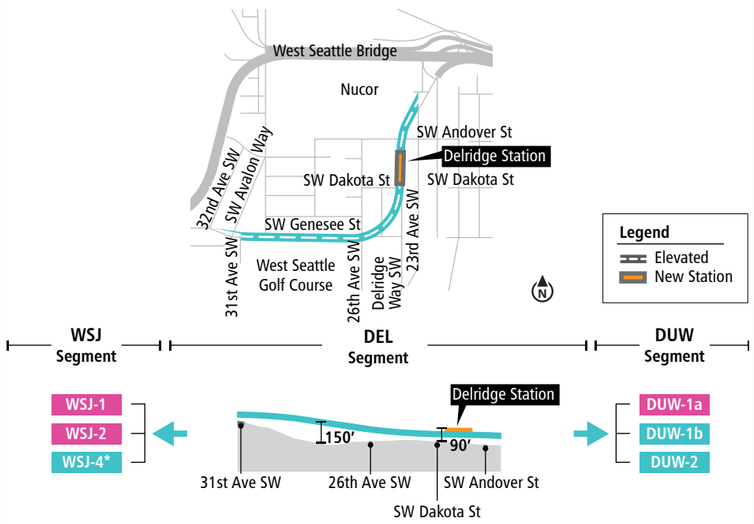
Visual Simulation of Option DEL-2b looking east along Southwest Genesee Street from Southwest Avalon Way

Figure ES-18. Delridge Segment - Delridge Way Station Alternative (DEL-3)

Delridge Way Station (DEL-3)

Alignment: Elevated along Delridge Way Southwest to the station, turning west and crossing to the south side of the Southwest Genesee Street right-of-way, north of the West Seattle Golf Course and continuing west along the south edge of Southwest Genesee Street.

Station: Delridge Station – Elevated station in the middle of Delridge Way Southwest, north of Southwest Dakota Street.



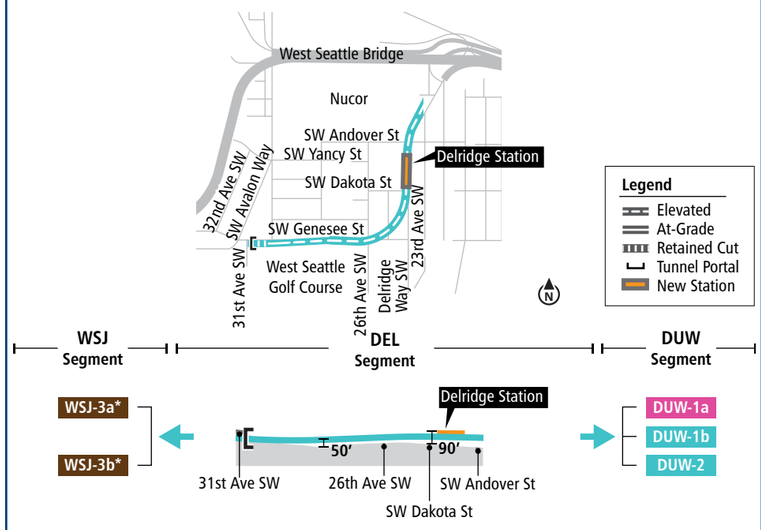
Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DUW-1a is shown for illustration purposes.

Figure ES-19. Delridge Segment - Delridge Way Station Lower Height Alternative (DEL-4)*

Delridge Way Station Lower Height (DEL-4)*

Alignment: Similar to Alternative DEL-3, except at a lower height to connect to tunnel alternatives in the West Seattle Junction Segment.

Station: Delridge Station – Elevated station in the middle of Delridge Way Southwest, north of Southwest Dakota Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DUW-1a is shown for illustration purposes.

Visual Simulation of Alternative DEL-3 looking east along Southwest Genesee Street from Southwest Avalon Way

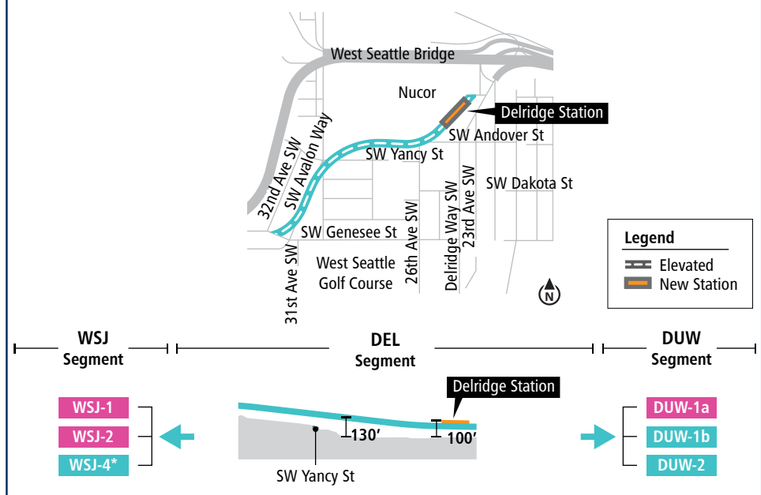
Visual Simulation of Alternative DEL-4 looking east along Southwest Genesee Street from Southwest Avalon Way*

Figure ES-20. Delridge Segment - Andover Street Station Alternative (DEL-5)

Andover Street Station (DEL-5)

Alignment: Elevated along the west side of Delridge Way Southwest, north of Southwest Andover Street; continuing west along Southwest Andover Street, then south along Southwest Avalon Way. The elevated guideway would continue south along Southwest Avalon Way, turning west on the north side of Southwest Genesee Street.

Station: Delridge Station – Elevated station north of Southwest Andover Street and west of Delridge Way Southwest in a northeast-southwest orientation.



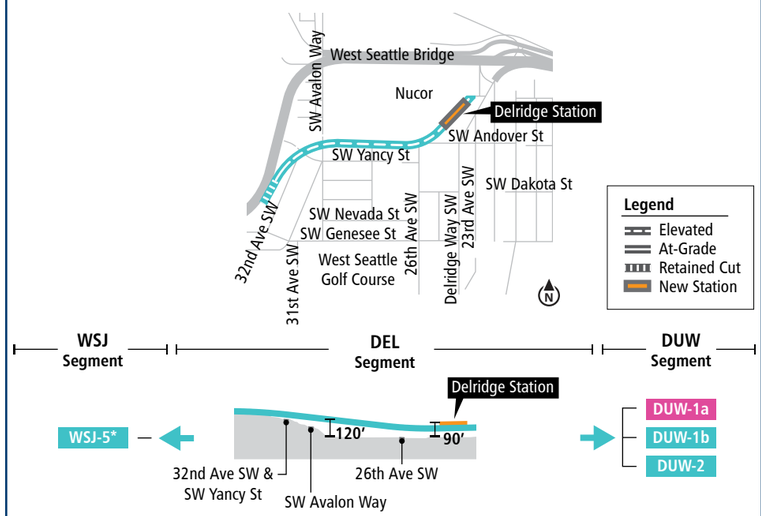
Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DUW-1a is shown for illustration purposes.

Figure ES-21. Delridge Segment - Andover Street Station Lower Height Alternative (DEL-6)*

Andover Street Station Lower Height (DEL-6)*

Alignment: Elevated along the west side of Delridge Way Southwest, north of Southwest Andover Street; continuing west along Southwest Andover Street. The elevated guideway would cross over Southwest Avalon Way and turn south in the vicinity of 32nd Avenue Southwest to travel south along the east side of the West Seattle Bridge connection to Fauntleroy Way Southwest, transitioning from elevated into a retained cut. Near Southwest Genesee Street, the guideway would turn west, continuing in a retained cut, passing below Southwest Genesee Street.

Station: Delridge Station – Elevated station north of Southwest Andover Street and west of Delridge Way Southwest in a northeast-southwest orientation.

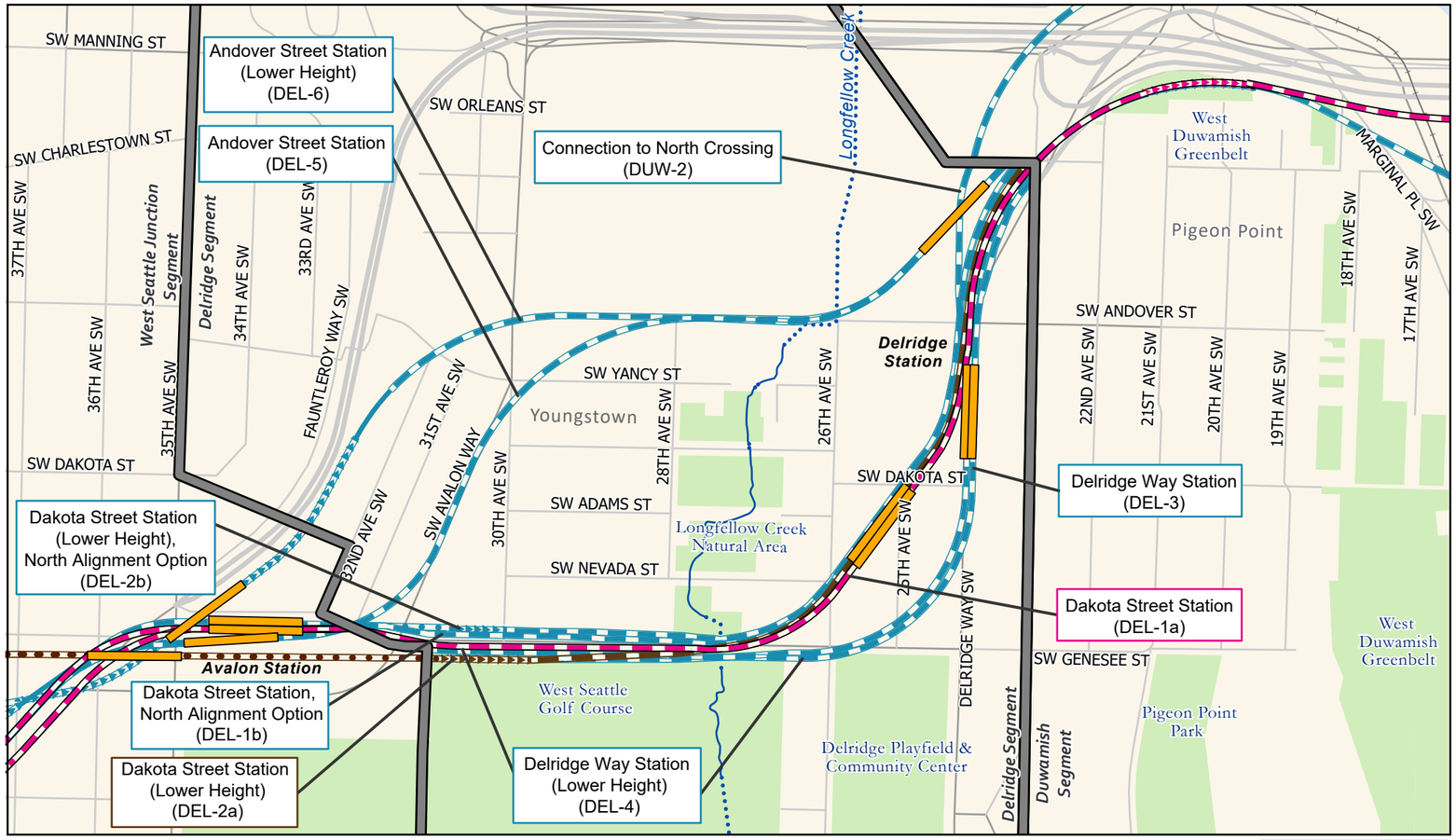


Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DUW-1a is shown for illustration purposes.

Visual Simulation of Alternative DEL-5 Southwest Avalon Way looking north at Southwest Genesee Street

Visual Simulation of Alternative DEL-6 looking north along 32nd Avenue Southwest*

Figure ES-22. Delridge Segment Alternatives, West Seattle Link Extension

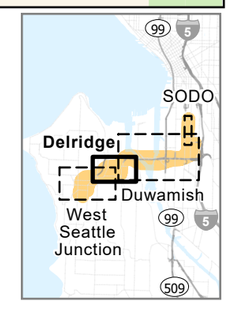


Source: City of Seattle, King County (2019, 2020, 2021).

Alternatives
- Preferred Alternative
- Preferred Alternative with Third-party Funding
- Other Alternatives

Alternative Profile
- Elevated
- At-Grade
- Tunnel
- Retained Cut

Station
- New
- Segment Line
- Railroad
- Stream
- Piped Stream
- Park



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Comparison of Delridge Segment Alternatives

Table ES-3 and the following text summarize the key environmental impacts of the Delridge Segment alternatives.

The Delridge Segment alternatives would all be in a primarily single-family residential neighborhood where the elevated guideway and station would become a dominant feature. The alternatives with stations at Dakota Street (Preferred Alternative DEL-1a, Option DEL-1b, Preferred Alternative DEL-2a*, and Option DEL-2b*) would displace residential blocks in the southeast corner of the Youngstown area for the elevated guideway and Delridge Station, including some Seattle Housing Authority residences. These alternatives would have the greatest impact on neighborhood character due to the extent of displacements, the isolation of residences that would remain near the intersection of Delridge Way Southwest and Southwest Genesee Street, and visual change. These alternatives would have the greatest number of adverse effects to historic resources. Along with Alternatives DEL-3 and DEL-4*, these alternatives would impact the most area with sensitive viewers due to their height and location in the neighborhood, but impacts would differ among alternatives. Most visual impacts for the Dakota Street and Delridge Way station alternatives would be along Southwest Genesee Street. Alternative DEL-3 and Alternative DEL-4* would affect the neighborhood character in Delridge based on the station location.

Alternative DEL-6* would have fewer residential displacements than the other alternatives. All alternatives except for Alternatives DEL-5 and DEL-6* would displace Washington State Department of Children, Youth, and Families offices. However, Alternative DEL-5 would displace a duplex owned by Transitional Resources, and Alternative DEL-6* would displace the Transitional Resources main office, onsite supportive housing, and adjacent apartment building. Transitional Resources is a non-profit organization that provides behavioral health services and supportive housing to help people make a transition to stable living in the community. Alternatives DEL-5 and DEL-6* would also have the most business displacements. All alternatives would displace a small business center that houses the neighborhood coffee shop, sandwich shop, and deli mart in an area with limited neighborhood commercial uses. All alternatives would require temporary construction closures on arterials, which would affect residents in Delridge, the adjacent neighborhoods, and those traveling to social resources in Delridge.

All alternatives except for Alternatives DEL-5 and DEL-6* would affect the West Seattle Golf Course, but only Preferred Alternative DEL-2a* and Alternative DEL-4* would permanently affect the playable area. The north alignment options (Option DEL-1b and Option DEL-2b*) would have less than 0.1 acre impact to Longfellow Creek Natural Area along Southwest Genesee Street, and Alternative DEL-3 would have similar impacts at a corner of Delridge Playfield.

If the Delridge Station was a terminus station of an M.O.S., it would have close to twice as many daily boardings due to the additional bus service connections to the station. Bus services from the west (Alaska Junction area) and south would be rerouted to serve the Delridge terminus station. Alternatives DEL-3 and DEL-4* would result in four additional residential property acquisitions to allow for the terminus station to accommodate additional bus layover facilities.

Table ES-3. Key Environmental Impacts of the Delridge Segment Alternatives

Resource Impact Measure	Preferred Dakota Street Station Alternative (DEL-1a) [a]	Dakota Street Station North Alignment Option (DEL-1b) [a]	Preferred Dakota Street Station Lower Height Alternative (DEL-2a)* [a]	Dakota Street Station Lower Height North Alignment Option (DEL-2b)* [a]	Delridge Way Station Alternative (DEL-3) [a]	Delridge Way Station Lower Height Alternative (DEL-4)* [a]	Andover Street Station Alternative (DEL-5)	Andover Street Station Lower Height Alternative (DEL-6)*
Cost	600 to 700 M	700 M	400 M	500 M	600 M	400 M	500 M	400 M
Ridership (daily boardings)	5,800 M.O.S.: 11,100	5,800 M.O.S.: 11,100	5,800 M.O.S.: 11,100	5,800 M.O.S.: 11,100	5,800 M.O.S.: 11,100	5,800 M.O.S.: 11,100	5,600 M.O.S.: 11,100	5,600 M.O.S.: 11,100
Operational Transportation Impacts	1 intersection impacted.	1 intersection impacted.	1 intersection impacted.	1 intersection impacted. Closure of 30th Avenue Southwest at Southwest Genesee Street.	1 intersection impacted (+1 with M.O.S.).	1 intersection impacted (+1 with M.O.S.).	2 intersections impacted (+1 with M.O.S.).	2 intersections impacted (+1 with M.O.S.).
Construction Transportation Impacts	Full closure on Delridge Way Southwest (nights/weekends), Southwest Dakota Street (nights/weekends), and Southwest Genesee Street (2 years). Partial closure on Delridge Way Southwest (9 months).	Full closure on Delridge Way Southwest (nights/weekends), Southwest Dakota Street (nights/weekends), and Southwest Genesee Street (2 years). Partial closure on Delridge Way Southwest.	Full closure on Delridge Way Southwest (nights/weekends), Southwest Dakota Street (nights/weekends) and Southwest Genesee Street (nights/weekends). Partial closure on Delridge Way Southwest (9 months).	Full closure on Delridge Way Southwest (nights/weekends), Southwest Dakota Street (nights/weekends) and Southwest Genesee Street (nights/weekends). Partial closure on Delridge Way Southwest (9 months) and Southwest Genesee Street (9 months).	Full closure on Delridge Way Southwest (nights/weekends), Southwest Dakota Street (3 years), and Southwest Genesee Street (2 years). Partial closure on Delridge Way Southwest (3 years).	Full closure on Delridge Way Southwest (nights/weekends), Southwest Dakota Street (3 years), and Southwest Genesee Street (nights/weekends). Partial closure on Delridge Way Southwest (3 years), and Southwest Genesee Street (9 months).	Full closure on Southwest Avalon Way (1 year).	Full closure on Southwest Avalon Way (nights and weekends).
Potential Displacements	Residential: 172 Business: 13 to 16 Employees: 140 to 150	Residential: 191 Business: 13 to 16 Employees: 140 to 150	Residential: 93 Business: 13 to 16 Employees: 140 to 150	Residential: 197 Business: 13 to 16 Employees: 140 to 150	Residential: 151 (+4 with M.O.S.) Business: 13 to 16 Employees: 140 to 150	Residential: 70 (+4 with M.O.S.) Business: 13 to 16 Employees: 140 to 150	Residential: 82 Business: 21 Employees: 170	Residential: 48 Business: 20 Employees: 140
Length of Potential Operational Visual Impacts (miles)	1.0	1.0	1.0	1.0	1.0	1.0	0.2	0.1
Potential Operational Noise Impacts before Mitigation (all impacts can be mitigated) [b]	212 to 222	207	232	178	208	237	270	102
Potential Operational Vibration or Groundborne Noise Impacts before Mitigation (all impacts can be mitigated) [b]	12	0	0	0	12	0	9	3
Historic Properties with Adverse Effects [c]	6	7	6	6	4	4	2	0
Park and Recreational Resources Impacts (acres operational/acres construction)	0.5/1.1	0.1/0.2	1.4/1.3	<0.1/<0.1	0.6/1.3	1.3/1.4	0/0	0/0

[a] Ranges reflect differences from connecting to different alternatives in adjacent segments.

[b] The numbers presented are the number of units, counted by individual residences, including individual units of multi-family structures, and number of structures for other uses, like schools, churches, and parks.

[c] Potentially adversely affected under Section 106 (to be confirmed through consultation with State Historic Preservation Officer).

ES.3.1.1.4. West Seattle Junction Segment

The West Seattle Junction Segment includes the area generally west of 31st Avenue Southwest, between Southwest Charleston Street and Southwest Hudson Street. There are five alternatives and one design option. All alternatives would have two stations: Avalon and Alaska Junction. Two of the alternatives are entirely elevated, one alternative is entirely within a tunnel, and two alternatives are a combination of retained cut or elevated and tunnel. The tunnel alternative has a design option with a different Alaska Junction Station location. Figures ES-23 through ES-28 show the West Seattle Junction Segment alternatives, and the connections with alternatives in adjacent segments. The pink color is used for preferred alternatives, brown is used for preferred alternatives with third-party funding, and blue is used for other alternatives. The figures also show the West Seattle Junction Segment alternatives in plan view and in profile view. The West Seattle Junction Segment alternatives are shown together on Figure ES-29.

Although tunnel alternatives are considered in the environmental review for this segment, a tunnel in West Seattle was not included in the Sound Transit 3 Plan (Sound Transit 2016), and, therefore, third-party funding could be required for the tunnel alternatives.

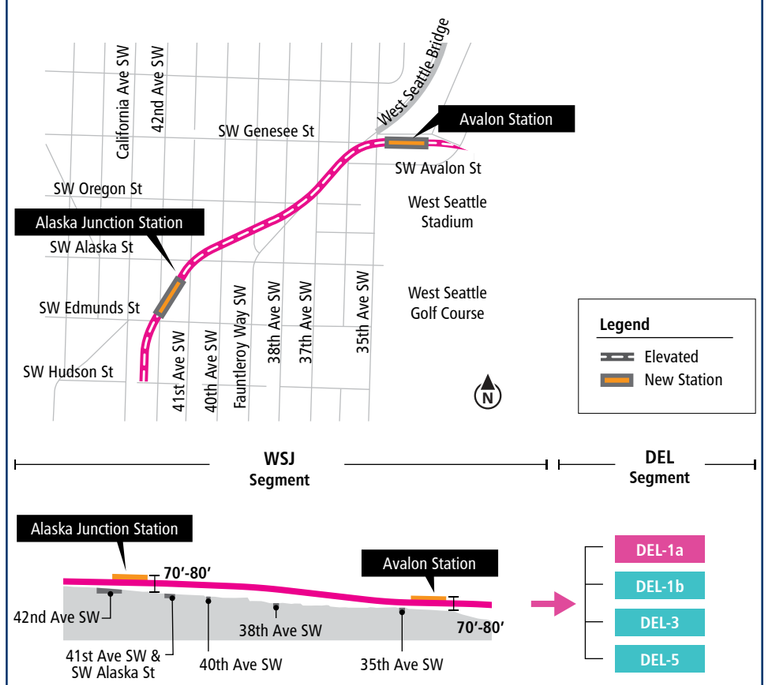
Figure ES-23. West Seattle Junction Segment - Preferred Elevated 41st/42nd Avenue Station Alternative (WSJ-1)

Preferred Elevated 41st/42nd Avenue Station (WSJ-1)

Alignment: Elevated along the south side of Southwest Genesee Street between 31st Avenue Southwest and Fauntleroy Way Southwest; turning southwest on the west side of Fauntleroy Way Southwest, turning south in the vicinity of 41st Avenue Southwest and Southwest Alaska Street and continues south to Southwest Hudson Street; ends on the west side of 42nd Avenue Southwest with tail track south of the Alaska Junction Station. A hi-rail access road would be provided for maintenance access.

Stations:

- **Avalon Station:** Elevated along the south side of Southwest Genesee Street, east of 35th Avenue Southwest.
- **Alaska Junction Station:** elevated between 41st Avenue Southwest and 42nd Avenue Southwest, south of Southwest Alaska Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

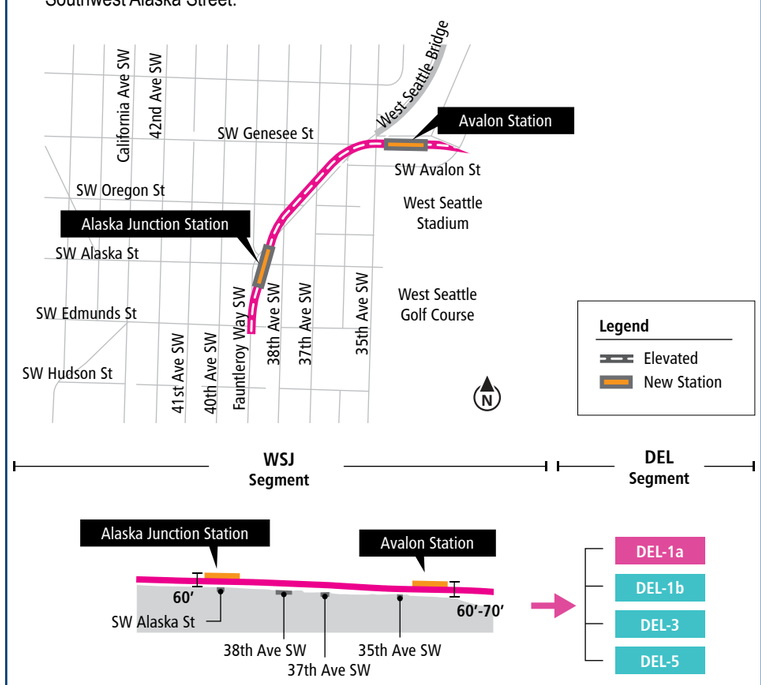
Figure ES-24. West Seattle Junction Segment - Preferred Elevated Fauntleroy Way Station Alternative (WSJ-2)

Preferred Elevated Fauntleroy Way Station (WSJ-2)

Alignment: Elevated along the south side of Southwest Genesee Street between 31st Avenue Southwest and Fauntleroy Way Southwest. The alignment would head southwest on Fauntleroy Way Southwest and continue along the west side of Fauntleroy Way Southwest. The guideway would cross to the east side of Fauntleroy Way Southwest north of Southwest Oregon Street. This alternative would also include a hi-rail access road for maintenance of the guideway. Elevated tail tracks would begin south of the Alaska Junction Station and end within the Fauntleroy Way Southwest right-of-way just past Southwest Edmunds Street.

Stations:

- **Avalon Station:** Elevated along the south side of Southwest Genesee Street and east of 35th Avenue Southwest.
- **Alaska Junction Station:** Elevated southeast of Fauntleroy Way Southwest straddling Southwest Alaska Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Visual Simulation of Preferred Alternative WSJ-1 looking east toward Southwest Avalon Way from Southwest Genesee Street

Visual Simulation of Preferred Alternative WSJ-2 looking south along 39th Avenue Southwest toward Fauntleroy Way Southwest

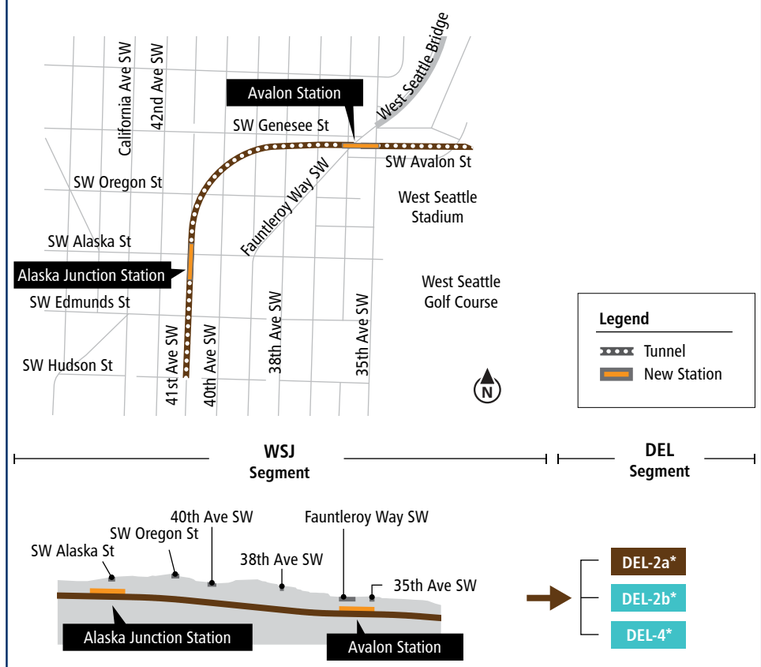
Figure ES-25. West Seattle Junction Segment - Preferred Tunnel 41st Avenue Station Alternative (WSJ-3a)*

Preferred Tunnel 41st Avenue Station (WSJ-3a)*

Alignment: Tunnel under Southwest Genesee Street heading west from 31st Avenue Southwest, then curving to the southwest between 37th Avenue Southwest and 41st Avenue Southwest, ending in the vicinity of Southwest Hudson Street, with the tail track in a north-south orientation under 41st Avenue Southwest.

Stations:

- **Avalon Station:** Tunnel beneath Southwest Genesee Street and Fauntleroy Way Southwest.
- **Alaska Junction Station:** Tunnel beneath 41st Avenue Southwest and Southwest Alaska Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

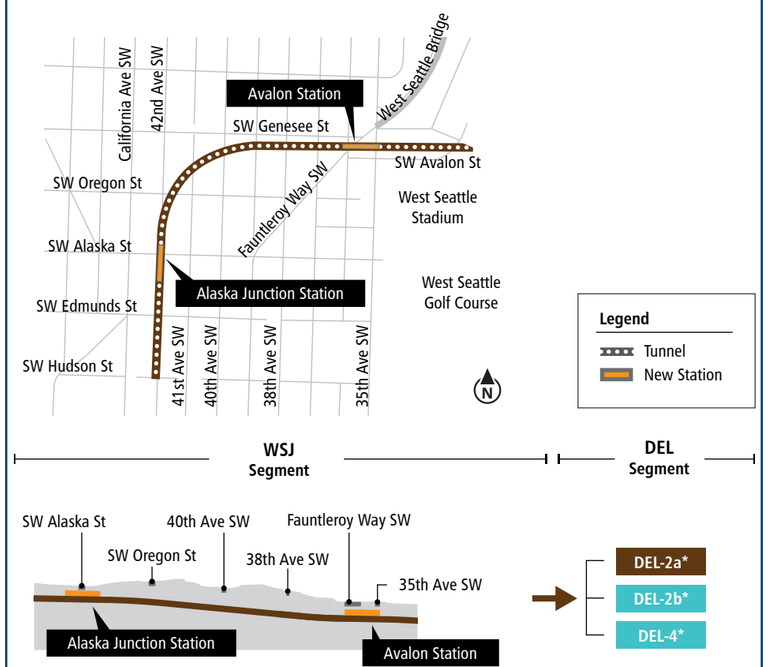
Figure ES-26. West Seattle Junction Segment - Preferred Tunnel 42nd Avenue Station Option (WSJ-3b)*

Preferred Tunnel 42nd Avenue Station Option (WSJ-3b)*

Alignment: Tunnel under Southwest Genesee Street heading west from 31st Avenue Southwest, then curving to the southwest between 37th Avenue Southwest and 42nd Avenue Southwest, ending in the vicinity of Southwest Hudson Street, with the tail track in a north-south orientation under 42nd Avenue Southwest.

Stations:

- **Avalon Station:** Tunnel beneath Southwest Genesee Street and Fauntleroy Way Southwest.
- **Alaska Junction Station:** Tunnel beneath 42nd Avenue Southwest and Southwest Alaska Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Photo on Southwest Avalon Way, looking east toward 35th Avenue Southwest

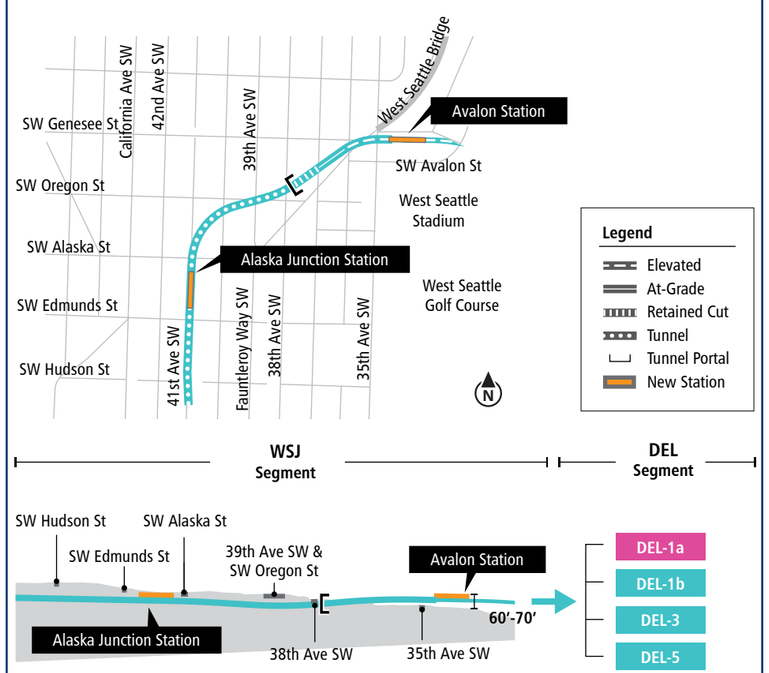
Figure ES-27. West Seattle Junction Segment - Short Tunnel 41st Avenue Station Alternative (WSJ-4)*

Short Tunnel 41st Avenue Station (WSJ-4)*

Alignment: Elevated along the south side of Southwest Genesee Street from 31st Avenue Southwest to the west side of Fauntleroy Way Southwest, continuing along the west side of Fauntleroy Way Southwest on elevated guideway before transitioning to at-grade near 37th Avenue Southwest. This alternative would include a hi-rail access road for maintenance, which would start at-grade and transition to an elevated structure to reach the height of the guideway. The guideway would turn west near Southwest Oregon Street and transition into a tunnel with a portal in the vicinity of Southwest Oregon Street and 38th Avenue Southwest. The tunnel would turn south and end south of Southwest Hudson Street, with a tail track in a north-south orientation along and under 41st Avenue Southwest.

Stations:

- **Avalon Station:** Elevated along the south side of Southwest Genesee Street and east of 35th Avenue Southwest.
- **Alaska Junction Station:** Tunnel beneath 41st Avenue Southwest, south of Southwest Alaska Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

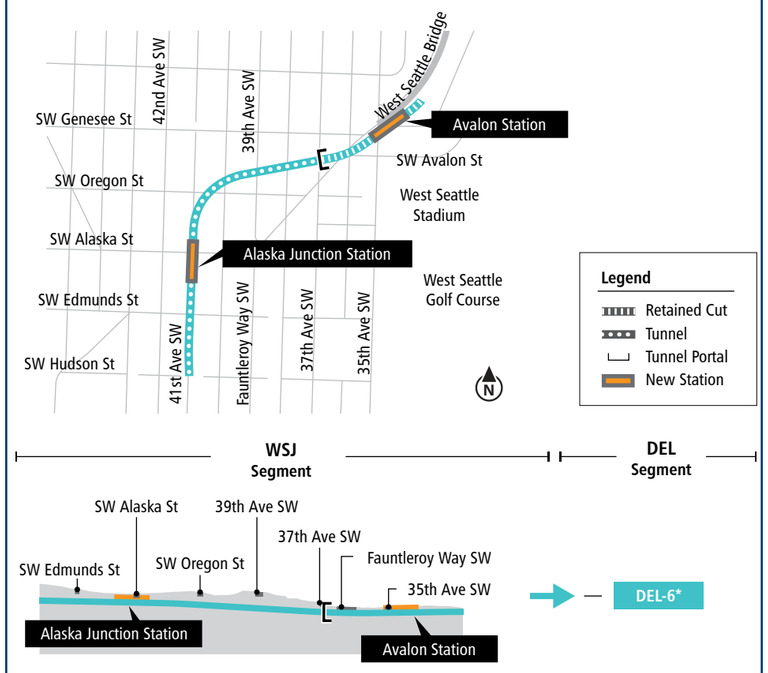
Figure ES-28. West Seattle Junction Segment - Medium Tunnel 41st Avenue Station Alternative (WSJ-5)*

Medium Tunnel 41st Avenue Station (WSJ-5)*

Alignment: Tunnel begins in a retained cut south of Southwest Yancy Street and follows the east side of the West Seattle Bridge connection to Southwest Genesee Street, entering into a tunnel at Southwest Genesee Street and 37th Avenue Southwest and curving southwest west of 37th Avenue Southwest to 41st Avenue Southwest to terminate at Southwest Hudson Street, with tail track in a north-south orientation under 41st Avenue Southwest.

Stations:

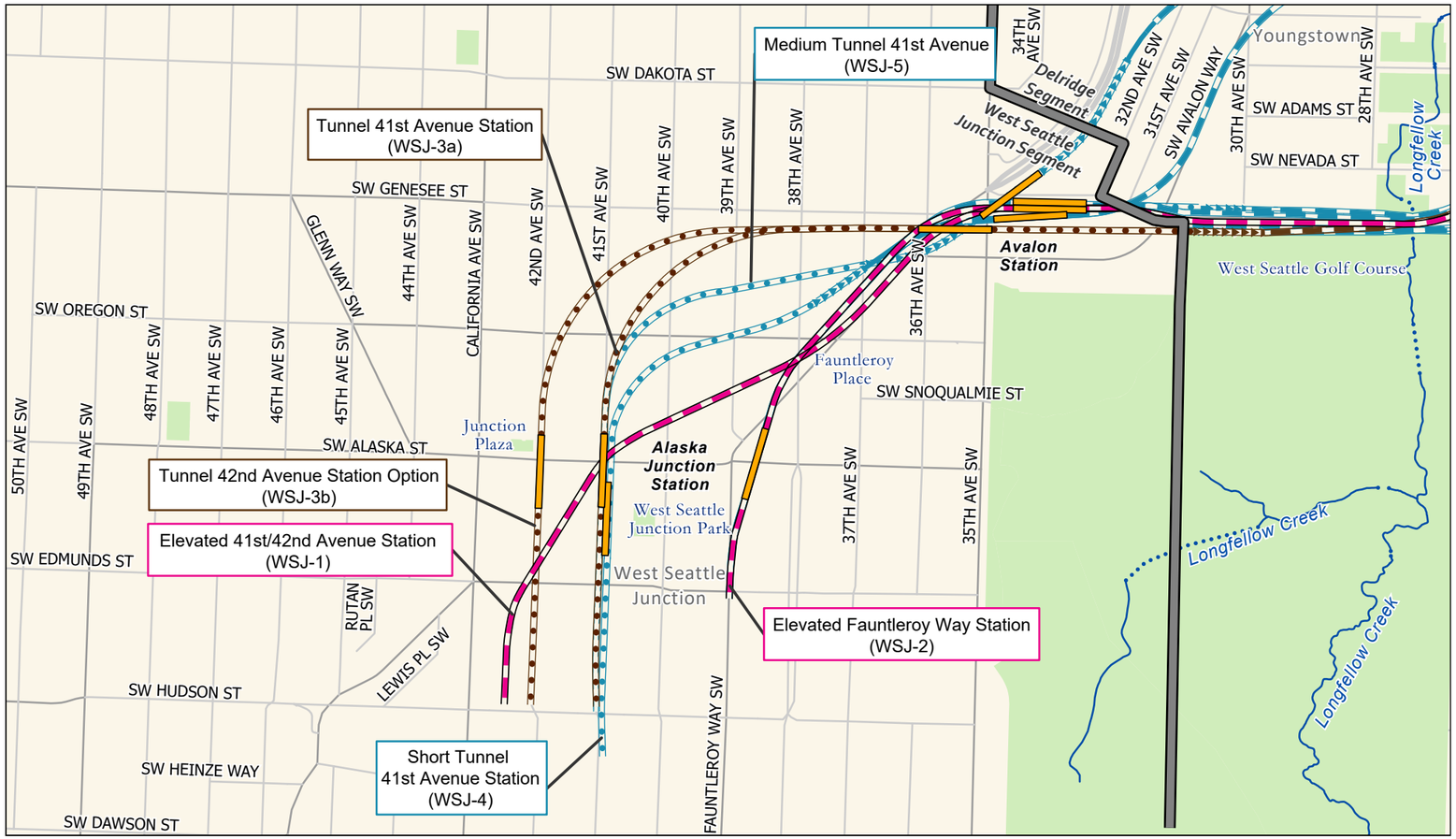
- **Avalon Station:** Retained cut south of Southwest Genesee Street, beneath Fauntleroy Way Southwest.
- **Alaska Junction Station:** Tunnel beneath 41st Avenue Southwest and Southwest Alaska Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Photo on Southwest Alaska Street looking east toward California Avenue Southwest

Figure ES-29. West Seattle Junction Segment Alternatives, West Seattle Link Extension



Source: City of Seattle, King County (2019, 2020, 2021).

Comparison of West Seattle Junction Segment Alternatives

Table ES-4 and the following text summarize the key environmental impacts of the West Seattle Junction Segment alternatives.

Preferred Alternative WSJ-1 and Preferred Alternative WSJ-2 would have the most impact on the community because the guideway would be entirely elevated and primarily outside of public right-of-way, which could have effects on neighborhood cohesion.

All alternatives except Preferred Option WSJ-3b* would displace Seattle Housing Authority residences. Preferred Alternative WSJ-1 would displace a Trader Joe's and a Safeway, while Preferred Alternative WSJ-2 and Preferred Option WSJ-3b* would displace the Safeway. Preferred Option WSJ-3b* would also displace Junction Plaza Park. Alternative WSJ-4* would have the greatest number of adverse effects to historic resources.

The tunnel alternatives would have fewer neighborhood impacts because the alternatives would be below-grade except for station entrances, minimizing surface impacts. Alternative WSJ-4* and Alternative WSJ-5* would have greater neighborhood impacts than Preferred Alternative WSJ-3a* or Preferred Option WSJ-3b* because more of the alternative would be above ground. The tunnel alternatives would also reduce construction impacts on the community because much of the construction activity (except for the stations and the tunnel portals) would be underground. However, the tunnel alternatives would have the greatest potential for noise impacts during construction, including night-time construction noise at the tunnel portals.

Table ES-4. Key Environmental Impacts of the West Seattle Junction Segment Alternatives

Resource Impact Measure	Preferred Elevated 41st/42nd Avenue Station Alternative (WSJ-1)	Preferred Elevated Fauntleroy Way Station Alternative (WSJ-2) [a]	Preferred Tunnel 41st Avenue Station Alternative (WSJ-3a)* [a]	Preferred Tunnel 42nd Avenue Station Option (WSJ-3b)* [a]	Short Tunnel 41st Avenue Station Alternative (WSJ-4)*	Medium Tunnel 41st Avenue Station Alternative (WSJ-5)*
Cost	1.3 B	900 M	1.7 B	1.7 B	1.3 B	1.1 B
Ridership (daily boardings)	7,600	7,700	7,600	7,600	7,600	7,600
Operational Transportation Impacts	2 intersection impacted.	3 intersections impacted.	1 intersection impacted.	1 intersection impacted.	0 intersections impacted. Closure of 37th Avenue Southwest north of Fauntleroy Way Southwest and 38th Avenue Southwest north of Southwest Oregon Street.	0 intersections impacted. Closure of Genesee Street at 35th Avenue Southwest.
Construction Transportation Impacts	Full closure on Fauntleroy Way Southwest (nights/weekends), and 35th Avenue Southwest (nights/weekends).	Full closure on Fauntleroy Way Southwest (nights/weekends), 35th Avenue Southwest (nights/weekends), and on Southwest Alaska Street (3 years).	Full closure on 35th Avenue Southwest (3 years). Partial closure on Fauntleroy Way Southwest (1.5 years).	Full closure on 35th Avenue Southwest (3 years). Partial closure on Fauntleroy Way Southwest (1.5 years).	Full closure on Fauntleroy Way Southwest (nights/weekends), and 35th Avenue Southwest (nights/weekends). Partial closure on Fauntleroy Way Southwest (9 months).	Full closure on 35th Avenue Southwest (1 year). Partial closures on Fauntleroy Way Southwest (1.5 years).
Potential Displacements [a]	Residential: 349 to 379 Business: 61 Employees: 280	Residential: 405 to 435 Business: 13 to 16 Employees: 80 to 90	Residential: 167 to 271 Business: 15 to 18 Employees: 90 to 100	Residential: 124 to 228 Business: 44 to 47 Employees: 130 to 140	Residential: 238 Business: 18 Employees: 100	Residential: 153 Business: 15 Employees: 90
Length of Potential Operational Visual Impacts (miles)	0.1	0.2	0	0	0	0
Potential Operational Noise Impacts before Mitigation (all impacts can be mitigated) [b]	400	351 to 401	0	0	128	6
Potential Operational Vibration or Groundborne Noise Impacts before Mitigation (all impacts can be mitigated) [b]	7	0	24 to 199	269 to 430	153	205
Historic Properties with Adverse Effects [c]	5	6	4	4	8	1
Park and Recreational Resources Impacts (acres operational/acres construction)	0.1/0	0.1/0	0/0	0.2/0	0/0	0/0

[a] Ranges reflect differences from connecting to different alternatives in adjacent segments.

[b] The numbers presented are the number of units, counted by individual residences, including individual units of multi-family structures, and number of structures for other uses, like schools, churches, and parks.

[c] Potentially adversely affected under Section 106 (to be confirmed through consultation with State Historic Preservation Officer).

ES.3.1.2. Ballard Link Extension

The Ballard Link Extension would start service in 2037. The target schedule for service to the Ballard Station is in 2037 but could be 2039 under the affordable schedule. Service from the SODO Station continuing south to the Tacoma Dome Station would use the existing Central Link light rail line. The Ballard Link Extension has five segments (Figure ES-30).

The Ballard Link Extension would begin near the existing SODO Station and proceed north to enter a new tunnel under Downtown Seattle. It would pass through the Chinatown-International District and have a new underground International District/Chinatown Station connected to the existing station. It would generally follow the corridor of 5th Avenue or 6th Avenue and Westlake Avenue north through Downtown Seattle to South Lake Union. At South Lake Union, the tunnel would turn west toward Uptown. Five underground stations—Midtown, Westlake, Denny, South Lake Union, and Seattle Center stations—would be included. Passengers would be able to transfer from the Ballard Link Extension to the existing Central Link light rail line at SODO, International District/Chinatown, and Westlake stations. Passengers currently travelling directly between south Seattle and points north of Westlake Station on the Central Link line and the future line connecting West Seattle to Everett (including the Capitol Hill, University of Washington, University District, Roosevelt Station, or Northgate stations and the future stations in Shoreline, Mountlake Terrace, Lynnwood, and Everett) would be required to transfer at either the SODO, International District/Chinatown, or Westlake stations when the Ballard Link Extension is built.

The Ballard Link Extension would exit the tunnel at a portal near Elliott Avenue West and continue either elevated, at-grade, or in a retained cut along Elliott Avenue West. It would then travel through Interbay either elevated along 15th Avenue West or elevated on the west side of Interbay Golf Center. It would cross over or under Salmon Bay near 15th Avenue West with a bridge or in a tunnel and continue north to a terminus near Northwest Market Street in Ballard. Stations would be constructed at Smith Cove, Interbay, and Ballard.

The WSBLE Project would have two potential M.O.S.'s: one from the SODO Station to Delridge Station on the West Seattle Link Extension line and from SODO Station to Smith Cove Station on the Ballard Link Extension line (the West Seattle and Ballard Link Extensions M.O.S.), and one from the SODO Station to the Smith Cove Station on the Ballard Link Extension line (the Ballard Link Extension-only M.O.S.). The M.O.S. for the Ballard Link Extension portion of the West Seattle and Ballard Link Extensions M.O.S. is from the SODO Station to the Smith Cove Station. The Ballard Link Extension-only M.O.S. would include improvements from Smith Cove Station to south of the SODO Segment, where the guideway would connect with the existing Operations and Maintenance Facility

Figure ES-30. Ballard Link Extension Segments and Stations

Central. For both M.O.S.'s, the tail track would extend approximately 500 feet north of the Smith Cove Station. Both M.O.S.'s can be applied to all Ballard Link Extension alternatives. The Ballard Link Extension-only M.O.S. includes the SODO Station and SODO improvements described under the West Seattle Link Extension in Section ES.3.2.1.1. Capital costs for this M.O.S. would be between approximately $7.8 billion and $8.8 billion, depending on the alternatives selected. See Chapter 2, Alternatives Considered, for additional information.

The following sections describe the alternatives and design options for the Ballard Link Extension by segment. The Ballard Link Extension has a total of 12 alternatives (several of which have design options); 4 of the alternatives are preferred and 1 of the alternatives and 1 of the design options are preferred with third-party funding. As not all alternatives can connect to every alternative in adjacent segments due to variations in the alignment and profile of the alternatives, possible connections are identified. These sections also summarize the potential key environmental impacts of the alternatives. More detailed information about the impacts associated with each of the alternatives can be found in Chapter 3, Transportation Environment and Consequences, and Chapter 4, Affected Environment and Environmental Consequences.

ES.3.1.2.1. SODO Segment

The SODO Segment includes improvements for both the West Seattle Link Extension and the Ballard Link Extension. The summary of impacts related to this segment are provided in Section ES.3.1.1, West Seattle Link Extension, for both the West Seattle Link Extension and Ballard Link Extension. This allows a comparison of this segment's alternatives as a whole and captures the combined impacts in this segment for both Link extensions.

The Ballard Link Extension-only M.O.S. would include all of the improvements and impacts discussed for SODO in Section ES.3.1.1. The Ballard Link Extension-only M.O.S. would connect to the existing Operations and Maintenance Facility Central in the Duwamish Segment and have associated environmental effects, as identified in Table ES-2. The Ballard Link Extension-only M.O.S. would displace one business with five employees, have one noise impact (which could be mitigated), and adversely affect two historic properties. If constructed to connect with Alternative DUW-2, the Ballard Link Extension-only M.O.S. would potentially require temporary relocation of parking and training facilities at Fire Station 14 during construction. With the Ballard Link Extension-only M.O.S., these effects would occur as part of the Ballard Link Extension instead of the West Seattle Link Extension because the connection to the Operations and Maintenance Facility Central would be needed earlier.

Elevated guideway and Link light rail train

ES.3.1.2.2. Chinatown-International District Segment

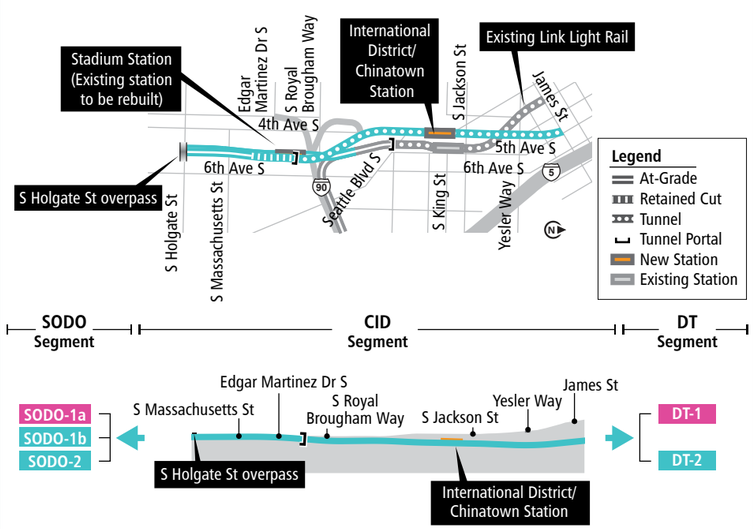
The Chinatown-International District Segment includes the area from South Holgate Street to James Street. There are two alternatives in the segment that would enter a tunnel heading north between 4th Avenue South and 6th Avenue South. This segment would have one station, the International District/Chinatown Station, which would connect to the existing International District/Chinatown Station. No preferred alternative has been identified for this segment, and both alternatives include a design option for a deeper station. Figures ES-31 through ES-34 show the Chinatown-International District Segment alternatives and design options, and the connections with alternatives in adjacent segments. The pink color is used for preferred alternatives, and blue is used for other alternatives. The figures also show the Chinatown-International District Segment alternatives in plan view and in profile view. Figure ES-33 shows the diagonal station configuration for Alternative CID-2a. The Chinatown-International District Segment alternatives and design options are shown together on Figure ES-35.

Figure ES-31. Chinatown-International District Segment - 4th Avenue Shallow Alternative (CID-1a)*

4th Avenue Shallow (CID-1a)*

Alignment: At-grade east of the existing light rail line, entering a tunnel between Edgar Martinez Drive South and South Royal Brougham Way; heading northwest to be under 4th Avenue South to a new International District/Chinatown Station. From the station, the tunnel alignment would continue north under 4th Avenue South and then transition to follow 5th Avenue or 6th Avenue in the Downtown Segment.

Station: International District/Chinatown Station – New station under 4th Avenue South, west of the existing International District/Chinatown Station with entrances on the west and east side of 4th Avenue South. The station platform would be approximately 80 feet deep. An underground connection would be provided to the southbound platform at the existing station. The 4th Avenue South Viaduct would be demolished and reconstructed to accommodate construction of this station. The Stadium Station on the existing light rail line would be removed and rebuilt to accommodate the tunnel portal for the Ballard Link Extension and realignment of the existing light rail line. The station would be closed for up to 2 years while it is being rebuilt. However, the Ballard Link Extension would not connect to this existing light rail line and Stadium Station.



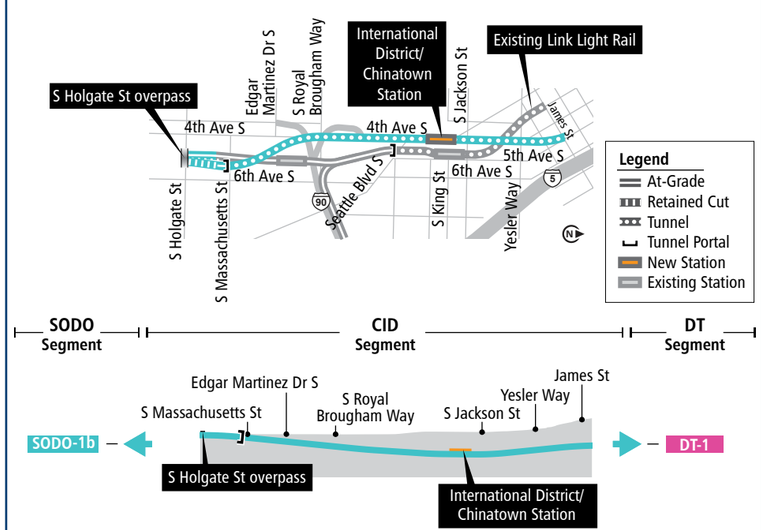
Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DT-1 is shown for illustration purposes.

Figure ES-32. Chinatown-International District Segment - 4th Avenue Deep Station Option (CID-1b)*

4th Avenue Deep Station Option (CID-1b)*

Alignment: Similar to Alternative CID-1a*, except the at-grade guideway would begin slightly farther east of the existing Link light rail line.

Station: International District/Chinatown Station – New station under 4th Avenue South, west of the existing International District/Chinatown Station. Station entrances would be the same as Alternative CID-1a*. An underground connection would be provided to the southbound platform at the existing station. The tunnel and station would be about 190 feet deep, approximately 110 feet deeper than Alternative CID-1a*, which would allow the station to be mined rather than constructed using cut-and-cover methods and would reduce surface disturbance during construction. The 4th Avenue South Viaduct would be demolished and reconstructed to accommodate construction of this station.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

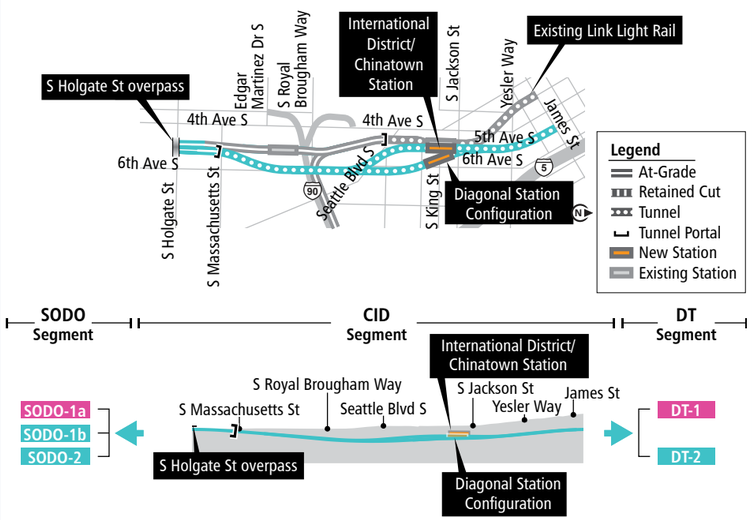
Union Station and plaza above the existing International District/Chinatown Station

Figure ES-33. Chinatown-International District Segment - 5th Avenue Shallow Alternative (CID-2a)

5th Avenue Shallow (CID-2a) and Diagonal Station Configuration

Alignment: At-grade east of the existing light rail line, entering a tunnel in the vicinity of South Massachusetts Street. The tunnel would continue north beneath 6th Avenue South and then transition to under 5th Avenue South near Seattle Boulevard South, east of the existing International District/Chinatown Station. There is also a diagonal station configuration where the tunnel would be under 6th Avenue South and transition to 5th Avenue South between South Weller Street and South Jackson Street. The station platform for the diagonal station configuration would be between 5th Avenue South and 6th Avenue South. From the station, the tunnel would continue north to James Street, either staying under 5th Avenue or transitioning to be under 6th Avenue in the Downtown Segment.

Station: New International District/Chinatown Station – New station under 5th Avenue South, east of the existing International District/Chinatown Station. An underground connection would be provided to the northbound platform at the existing station. The northbound station platform would be stacked over the southbound station platform and would be approximately 90 feet deep (to the lower platform). The station platform for the diagonal station configuration would be approximately 25 feet deeper, with a total depth of approximately 115 feet.



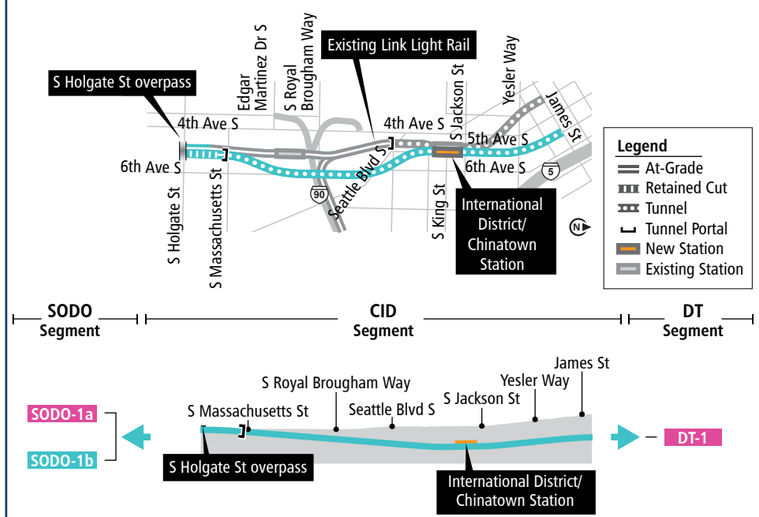
Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to DT-1 is shown for illustration purposes.

Figure ES-34. Chinatown-International District Segment - 5th Avenue Deep Station Option (CID-2b)

5th Avenue Deep Station Option (CID-2b)

Alignment: Similar to Alternative CID-2a, except with a deeper tunnel and station.

Station: International District/Chinatown Station – New station under 5th Avenue South, east of the existing International District/Chinatown Station. Station entrances would be the same as Alternative CID-2a. An underground connection would be provided to the northbound platform at the existing station. The tunnel and station would be about 180 feet deep, approximately 90 feet deeper than Alternative CID-2a, which would allow the station to be mined rather than constructed using cut-and-cover methods and would reduce surface disturbance during construction.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Chinatown Gate in the Chinatown/International District

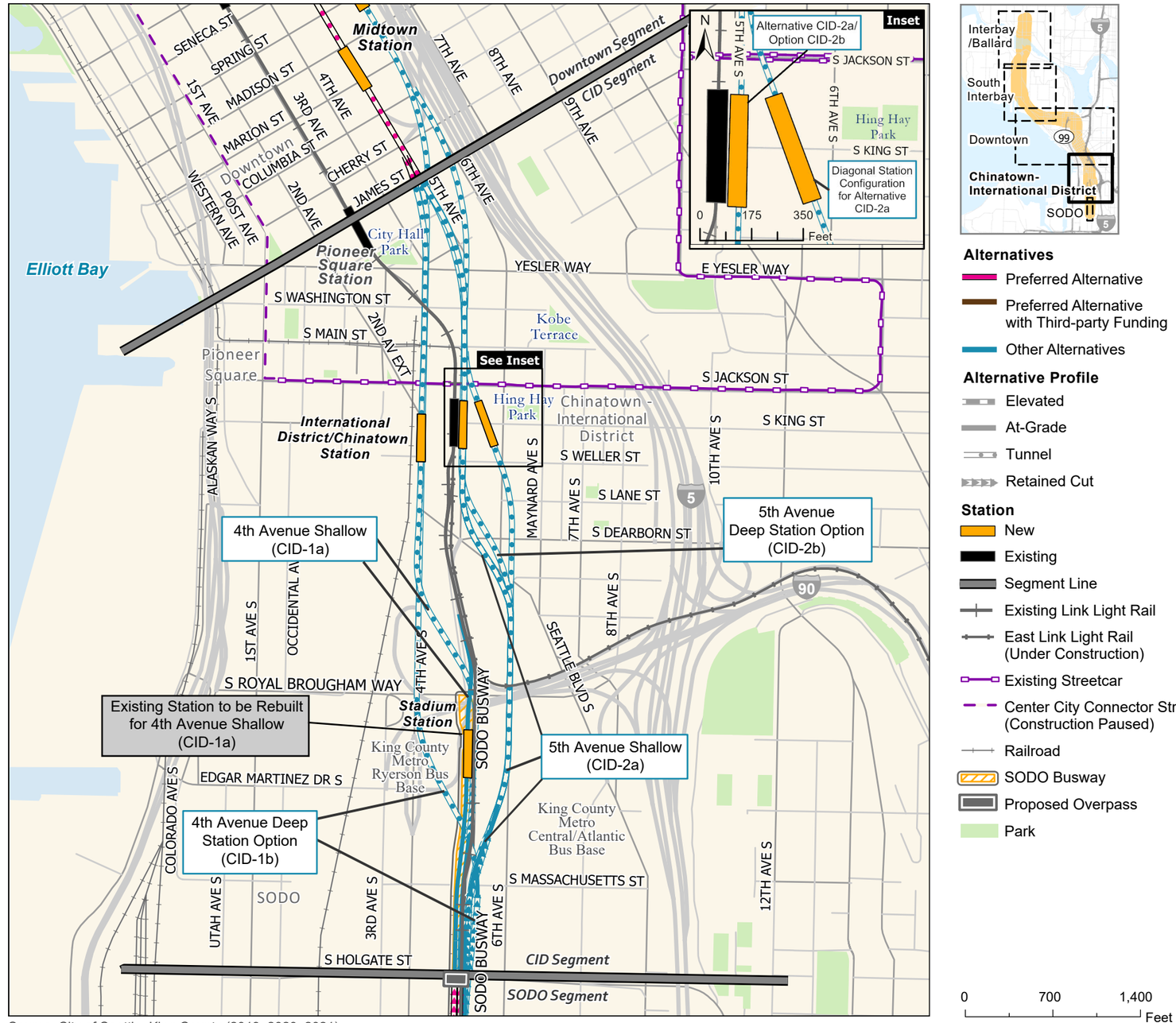
Comparison of Chinatown-International District Segment Alternatives

Table ES-5 and the following text summarize the key environmental impacts of the Chinatown-International District Segment alternatives. The proposed station would be adjacent to the existing station in the Chinatown/International District, which is has been a hub of cultural importance for Seattle and its Asian American communities since the mid-to-late 1800s.

Option CID-1b* would have the most employee displacements and greatest impact to public services because it would require relocation of Metro's Ryerson Bus Base. Residential displacements would only occur with Alternative CID-1a* from the loss of access to the ICON Apartments during construction. These housing units would remain and could be inhabited again following construction. It is anticipated that the Chief Seattle Club Eagle Village pilot modular housing shelter will have moved prior to construction of the project, but if not, Alternatives CID-1a* and CID-2a and Option CID-2b would displace the shelter and residents would be relocated. All alternatives would displace some businesses in the Chinatown-International District. Alternative CID-2a and Option CID-2b would have the most business displacements. For Alternative CID-2a, the diagonal station configuration could require additional temporary displacement of some businesses during construction.

Entrance to existing International District/Chinatown Station

Figure ES-35. Chinatown-International District Segment Alternatives, Ballard Link Extension



Source: City of Seattle, King County (2019, 2020, 2021).

Increased pedestrian and bicycle activity around the new station for all alternatives would increase intersection delays. Alternative CID-1a* and Option CID-1b*, would permanently remove a bus lane on 4th Avenue South. Many local and regional bus routes use this bus lane, although many regional routes would no longer be operating because they would be replaced with light rail service currently under construction. For all alternatives, travel times would increase for light rail riders traveling between Link stations to the south and the Stadium Station, which would not be a stop on the Ballard-to-Tacoma line. Instead, these riders would need to transfer to the West-Seattle-to-Everett line to reach the Stadium Station--mostly likely at either the International District/Chinatown or SODO stations--or get off at one of those stations and walk to their destination. A transfer at the SODO Station provides the most direct trip to the Stadium Station for this population of riders, and would result in between 2 and 5 additional minutes of travel time.

Alternative CID-2a and Option CID-2b, would displace some buildings and businesses at the edge of the neighborhood for station entrances, providing an opportunity for the station entrances to be more integrated into the Chinatown-International District compared to the 4th Avenue South alternatives. Alternative CID-2a and Option CID-2b would displace businesses at the edge of the Chinatown-International District neighborhood (13 of the 18 to 27 total business displacements in the segment).

All alternatives would have localized construction areas within the Chinatown-International District, and the community would experience construction disruption such as noise, visual changes, and traffic diversion. However, the 5th Avenue South alternatives (Alternative CID-2a and Option CID-2b) would place construction activities closer to the community than the 4th Avenue South alternatives. All alternatives would require road closures during construction that could result in traffic diversion into the Chinatown-International District. The 5th Avenue South alternatives would have less traffic diversion and for a shorter period of time, because the 4th Avenue South closure required for Alternative CID-1a* and Option CID-1b* would be longer duration and 4th Avenue South carries a substantially greater number of vehicles that would need to detour. Both Alternative CID-1a* and Option CID-1b* would require full and partial closures of portions of 4th Avenue South for several years, with Option CID-1b* having the longest duration of full closure. Alternative CID-2a would have a partial closure of a portion of 5th Avenue South for a couple of years and a full closure for less than a year, whereas Option CID-2b would have partial closure for a year. Closure of the 4th Avenue South/South Jackson Street intersection for Alternative CID-1a* and Option CID-1b* would temporarily impact this segment of the Seattle Streetcar, which would impact community mobility between Pioneer Square and the Chinatown-International District for up to 2 years. Closure of the 5th Avenue South/South Jackson Street intersection for Alternative CID-2a would impact this segment of the Seattle Streetcar for less than 1 year. The other segments of the streetcar system would still be able to operate but not as a connected system, which could impact the frequency of service. Alternative CID-2a would require partial closures of 5th Avenue South. The diagonal station configuration for this alternative and Option CID-2b would avoid temporary closure of the streetcar.

Alternative CID-1a* would require the Stadium Station to be temporarily closed to connect to the West Seattle-to-Everett line. During this time, the Stadium Station's users would need to use the International District/ Chinatown or SODO stations or another travel mode which would increase travel time for riders.

Alternative CID-2a would require utility relocations including Pigeon Alley, which houses the Sound Transit fiber optic backbone for light rail operation, along with several other utilities. The diagonal station configuration could potentially avoid relocating Pigeon Alley.

All alternatives would have an adverse effect on historic properties. Alternative CID-1a* and Option CID-1b* would have an adverse effect on Seattle Chinatown Historic District from construction disruption and to Pioneer Square-Skid Road National Historic District from construction disruption and partial property acquisition. Alternative CID-2a and Option CID-2b would have an adverse effect on Seattle Chinatown Historic District from property demolition and construction disruption. The Chinatown Gate would be wrapped for protection for the duration of civil construction of Alternative CID-2a, the diagonal station configuration, and Option CID-2b as described in Section 2.6.1, Construction Sequence and Activities, in Chapter 2. Some of the buildings within this segment contain areaways. Areaways are belowground spaces within street rights-of-way, enclosed by the sidewalks above and by building foundations and street supports on either side. Areaways located in a National Register of Historic Places (National Register)-listed historic district or attached to a National Register-listed building are considered historic properties, even though they are actually part of the right-of-way. All areaways that retain integrity and are connected to a historic property or within a historic district are assumed to be historic for the purposes of this project. Prior to publication of the Final Environmental Impact Statement, historic areaways within the area of potential effects for the Preferred Alternative will be identified and documented, and evaluated for potential National Register eligibility.

Alternative CID-1a* and Option CID-1b* could require third-party funding for reconstruction of the 4th Avenue South Viaduct. Based on assessments to date, construction in this segment could take longer for Alternative CID-1a* and Option CID-1b* (primarily due to reconstruction of the 4th Avenue South Viaduct) compared to Alternative CID-2a and Option CID-2b. Construction in the area of the station (generally between Seattle Boulevard South and James Street) for Alternative CID-1a* would take approximately 9 to 11 years and Option CID-1b* would take approximately 8 to 10 years. Construction in the station area for Alternative CID-2a would take approximately 8 to 9 years and Option CID-2b would take approximately 6.5 to 7.5 years. The construction duration for the Alternative CID-2a diagonal station configuration would be shorter. It is anticipated that construction in the station area of the diagonal station configuration would take approximately 5 to 6 years. The 4th Avenue South Viaduct rebuild could lengthen the schedule of the Ballard Link Extension, but whether there is a delay and the extent of that delay would not be known until final design and construction sequencing is determined.

Existing International District/Chinatown Station platform

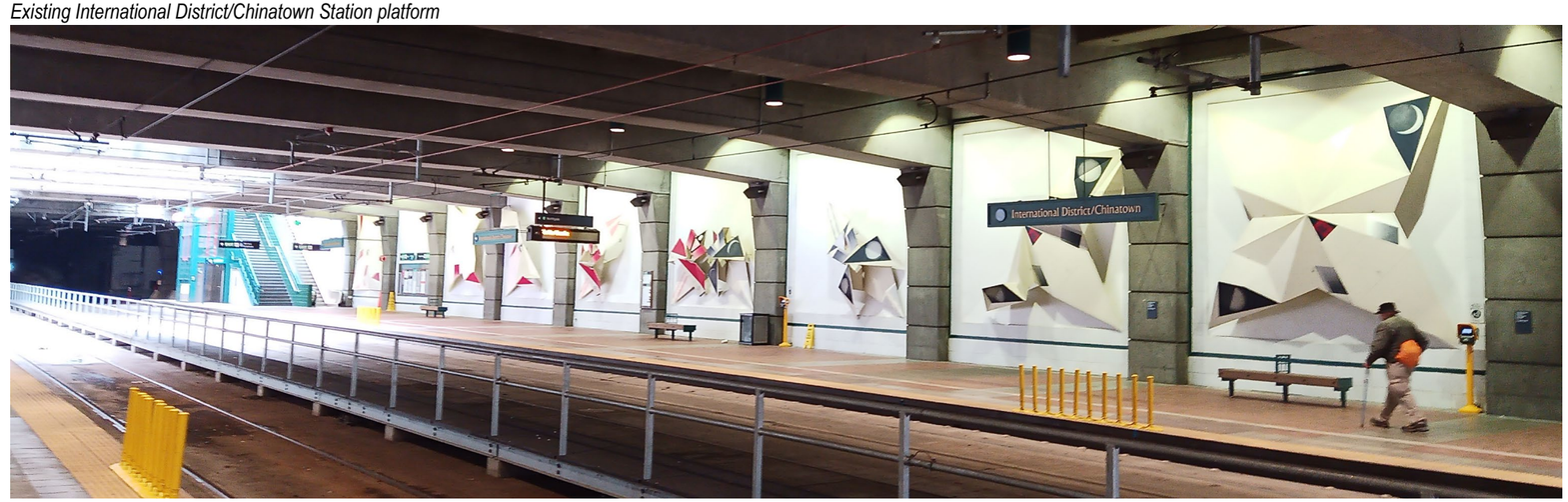


Table ES-5. Key Environmental Impacts of the Chinatown-International District Segment Alternatives

Resource Impact Measure	4th Avenue Shallow Alternative (CID-1a)*	4th Avenue Deep Station Option (CID-1b)*	5th Avenue Shallow Alternative (CID-2a) and Diagonal Station Configuration	5th Avenue Deep Station Option (CID-2b)
Cost ($)	1.8 B [a]	1.7 B [a]	1.2 to 1.3 B [b]	1.3 B
Ridership (daily boardings) [c]	30,000 to 34,000	30,000 to 34,000	30,000 to 34,000	30,000 to 34,000
Operational Transportation Impacts	2 intersections impacted. The existing northbound bus lane on 4th Avenue South removed. Travel times would increase for light rail riders traveling between Link stations to the south and the Stadium Station. Up to 200 off-street parking spaces and 10 to 20 on-street parking spaces removed.	2 intersections impacted. The existing northbound bus lane on 4th Avenue South removed. Travel times would increase for light rail riders traveling between Link stations to the south and the Stadium Station. About 200 off-street parking spaces and 45 to 60 on-street parking spaces removed. Metro's Ryerson Bus Base displaced.	1 intersection impacted. Travel times would increase for light rail riders traveling between Link stations to the south and the Stadium Station. About 80 off-street and 50 to 65 on-street parking spaces removed.	1 intersection impacted. Travel times would increase for light rail riders traveling between Link stations to the south and the Stadium Station. About 80 off-street and 35 to 45 on-street parking spaces removed.
Construction Transportation Impacts	Full closure of 4th Avenue South (South Main Street to north side of South Jackson Street) (4 years), the South Jackson Street/4th Avenue South intersection (2 years), and Seattle Boulevard South/4th Avenue South intersection (2 years). Partial closure of 4th Avenue South (South Jackson Street to Interstate 90 off-ramp) (6 years). Closure of the 4th Avenue South/South Jackson Street intersection would impact this segment of the Seattle Streetcar. The other segments (Capitol Hill/First Hill, and Downtown/South Lake Union) would still operate, but not as a connected system. Stadium Station would be closed for up to two years to connect to the West Seattle-to-Everett line. Stadium Station's users would need to use the International District/Chinatown or SODO stations which would increase travel time to Lumen Field and T-Mobile Park for riders. Reroutes for Ryerson and Atlantic/Central bus base access. The 4th Avenue South access to the Weller Street bridge would likely be closed.	Full closure of 4th Avenue South (South Jackson Street to Seattle Boulevard South) (6.5 years) and the South Jackson Street/4th Avenue South intersection (2 years). Partial closure of 4th Avenue South (South Jackson Street to Seattle Boulevard South) (2 years). Closure of the 4th Avenue South/South Jackson Street intersection would impact this segment of the Seattle Streetcar The other segments would still operate, but not as a connected system. The 4th Avenue South access to the Weller Street bridge would likely be closed.	Full closure of 5th Avenue South (South Jackson Street to South Weller Street) (9 months). Partial closure of 5th Avenue South (South Jackson Street to South Weller Street) (2.5 years) and the 5th Avenue South/ South Jackson Street intersection (6 months). The diagonal station configuration would have minor disruptions to traffic along 5th Avenue South and would not require closure of the 5th Avenue South/South Jackson Street intersection. Metro trolley buses would be relocated from 5th Avenue South to either 7th Avenue South or 8th Avenue South. The diagonal station configuration would avoid the trolley bus diversion. Closure of the 5th Avenue South/South Jackson Street intersection would impact this segment of the Seattle Streetcar. The other segments would still operate, but not as a connected system. The diagonal station configuration would not impact the streetcar. Impact to Atlantic/Central Bus Base layover. This alternative and the diagonal station configuration would require full closure of South King Street (4 years for the alternative and 3 years for the station configuration).	Partial closure of 5th Avenue South (1 year). The trolley bus diversion and the streetcar impacts would be avoided. Impact to Atlantic/Central Bus Base layover.
Potential Displacements	Residential: 120 Business: 5 to 8 [d] Employees: 120	Residential: 0 Business: 5 Employees: 200	Residential: 0 Business: 19 to 27 [d] Employees: 170 to 230 [d]	Residential: 0 Business: 18 Employees: 170
Potential Operational Vibration or Groundborne Noise Impacts before Mitigation (all impacts can be mitigated) [e]	0	0	24 to 74 [b, d]	0
Historic Properties and Historic District with Adverse Effects [f]	3	3	3	3

[a] The cost of Alternative CID-1a* and Option CID-1b* includes the cost of reconstructing the 4th Avenue South Viaduct.

[b] Range reflects differences from connecting to different alternatives in adjacent segments. Cost range is due to connection to alternatives in the Downtown Segment.

[c] The ridership is the total for the new and existing International District/Chinatown Station.

[d] Range is based on station configuration and construction methods. These include potential temporary displacements of less than a year during construction.

[e] The numbers presented are the number of units, counted by individual residences, including individual units of multi-family structures, and number of structures for other uses, like schools, churches, and parks.

[f] Potentially adversely affected under Section 106 (to be confirmed through consultation with State Historic Preservation Officer).

ES.3.1.2.3. Downtown Segment

The Downtown Segment includes the area between James Street in Downtown and 2nd Avenue West in Uptown. The segment includes two alternatives and five stations: Midtown, Westlake, Denny, South Lake Union, and Seattle Center. The two alternatives would both be in tunnels and would generally follow 5th Avenue or 6th Avenue and Westlake Avenue North through Downtown Seattle to South Lake Union. In South Lake Union, the tunnel alignments would turn west toward Uptown. Figures ES-36 to ES-37 provide a summary of the alternatives and the connections between these alternatives and alternatives in adjacent segments. The pink color is used for preferred alternatives, and blue is used for other alternatives. The figures also show the Downtown Segment alternatives in plan view and in profile view. The Downtown Segment alternatives are shown together on Figure ES-38.

View of the downtown Seattle skyline from Smith Cove

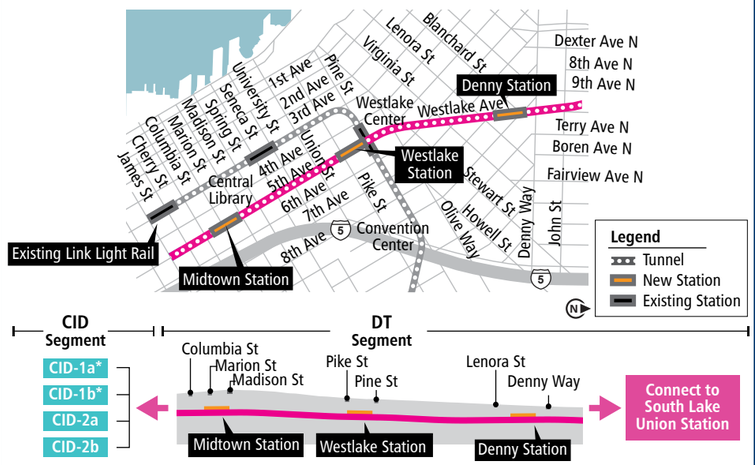
Figure ES-36. Downtown Segment - Preferred 5th Avenue/ Harrison Street Alternative (DT-1)

Preferred 5th Avenue/Harrison Street (DT-1)

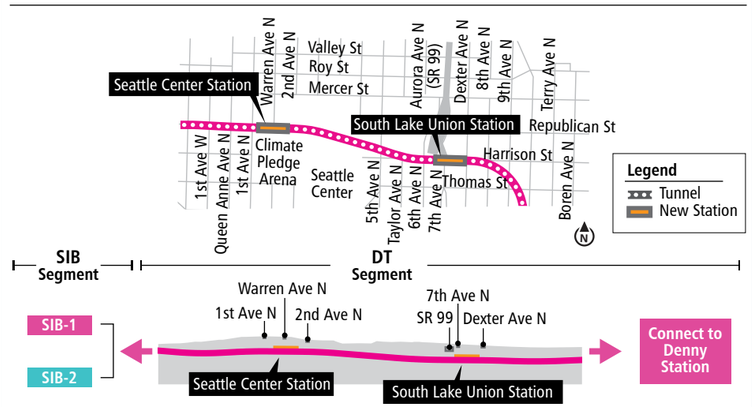
Alignment: Tunnel generally under 5th Avenue and Westlake Avenue to Harrison Street; heading west under Harrison Street and Republican Street.

Stations:

- **Midtown Station:** Under 5th Avenue between Columbia Street and Madison Street.
- **Westlake Station:** Under 5th Avenue between Pike Street and Pine Street.
- **Denny Station:** Under Westlake Avenue between Denny Way and Lenora Street.
- **South Lake Union Station:** Under Harrison Street, between Dexter Avenue North and Aurora Avenue North.
- **Seattle Center:** Under Republican Street on the west side of Seattle Center.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

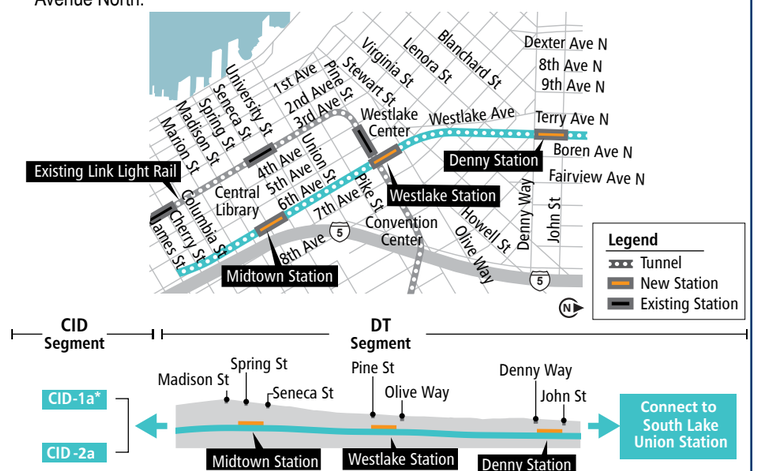
Figure ES-37. Downtown Segment - 6th Avenue/Mercer Street Alternative (DT-2)

6th Avenue/Mercer Street (DT-2)

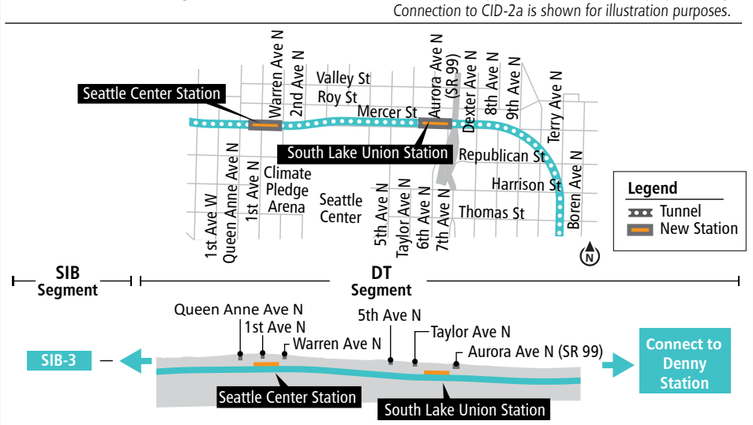
Alignment: Tunnel under 6th Avenue and Terry Avenue to Mercer Street; heading west on the north side of Mercer Street.

Stations:

- **Midtown Station:** Under 6th Avenue between Spring Street and Seneca Street.
- **Westlake Station:** Under 6th Avenue between Olive Way and Pine Street.
- **Denny Station:** Under Terry Avenue North between Denny Way and John Street.
- **South Lake Union Station:** North of Mercer Street between Aurora Avenue North and Taylor Avenue North.
- **Seattle Center Station:** Under Mercer Street between Warren Avenue North and 1st Avenue North.

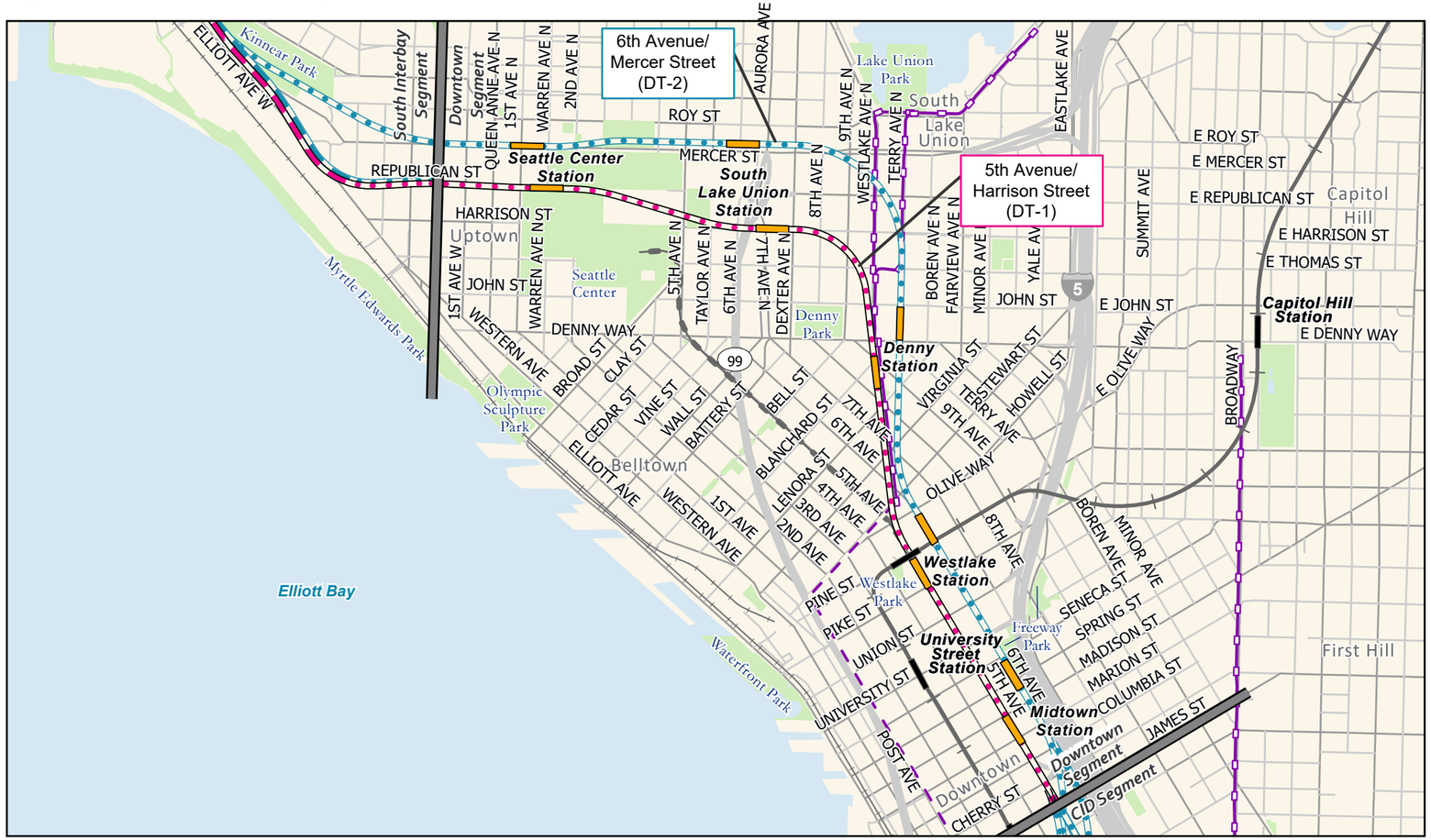


Diagrams are not to scale and all measurements are approximate for illustration purposes only. Connection to CID-2a is shown for illustration purposes.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Figure ES-38. Downtown Segment Alternatives, Ballard Link Extension

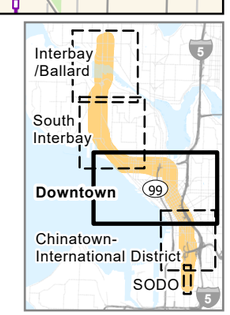


Source: City of Seattle, King County (2019, 2020, 2021).

Alternatives
- Preferred Alternative
- Preferred Alternative with Third-party Funding
- Other Alternatives

Alternative Profile
- Elevated
- At-Grade
- Tunnel
- Retained Cut

Station
- New
- Existing
- Segment Line
- Existing Link Light Rail
- Railroad
- Monorail
- Existing Streetcar
- Connector City (Construction Paused)
- Piped Stream
- Park



0 1,000 2,000 Feet

N

Comparison of Downtown Segment Alternatives

Table ES-6 and the following text summarize the key environmental impacts of the Downtown Segment alternatives. Residential displacements for both alternatives would occur primarily in Uptown for construction staging at the Seattle Center Station. Business displacements for both alternatives would occur for station entrances and construction staging near the entrances.

Preferred Alternative DT-1 would have greater total ridership compared to Alternative DT-2 due to there being more bus connections and better accessibility to land uses at some stations. Ridership at Midtown, Denny, and South Lake Union stations would be higher for Preferred Alternative DT-1, and ridership at Westlake and Seattle Center stations would be higher for Alternative DT-2. The South Lake Union and Seattle Center stations for both alternatives would provide the benefit of increased access to the businesses in Uptown and South Lake Union, such as Amazon, and to the social and cultural attractions around Seattle Center. Both alternatives would improve access to multiple federal, state, and local offices and services, and some schools. For both alternatives, the increases in pedestrian and bicycle activity around the stations, as well as additional drop-off and pick-up trips, would increase intersection delays.

Vibration and/or noise from construction for Preferred Alternative DT-1 could impact the Seattle Children's Research Institute, Juno Therapeutics, Seattle Repertory Theatre, Vera Project, K.E.X.P. radio station, Seattle International Film Festival Film Center, Cornish Playhouse, and A/NT Art Gallery. Vibration from construction for Alternative DT-2 could impact some medical research buildings in South Lake Union such as University of Washington Medicine South Lake Union Campus and the Allen Institute for Brain Science, and buildings along Mercer Street such as Cascade Public Media (K.C.T.S television station), the Seattle Opera and KING FM, McCaw Hall, and the Seattle Repertory Theatre. Preferred Alternative DT-1 would have the greatest impacts to parks during construction. Preferred Alternative DT-1 would have permanent impacts on Seattle Center for a Seattle Center Station entrance. Alternative DT-2, located off Seattle Center, would avoid these permanent impacts.

Construction-related road closures would occur for both Downtown Segment alternatives. Preferred Alternative DT-1 would have partial and full closures of portions of 4th Avenue and 5th Avenue as well as full closure of a portion of Westlake Avenue for several years. Alternative DT-2 would not impact these streets but would have full closure of 6th Avenue and partial closure of Mercer Street for several years. Road closures for both alternatives would impact the segment of Seattle Streetcar operations near Denny Station for 4 years. For Preferred Alternative DT-1, other segments of the Seattle Streetcar could continue to operate but not as a connected system, which could impact the

frequency of service. Alternative construction approaches that could allow for single track operations of the streetcar and maintain access to the maintenance facility during construction are being considered for this location that could substantially reduce the impact to streetcar service through the Westlake Avenue/Denny Way portion of the route. The streetcar would be closed at the Terry Avenue North and Thomas Street intersection for Alternative DT-2, which would impact northbound travel of the streetcar and could impact frequency of service. The construction-related road closures for Preferred Alternative DT-1, particularly on 4th Avenue, 5th Avenue, and some cross streets, would have the greatest impact on access to public facilities and services in the downtown commercial core (including the Seattle Public Library Central Branch, King County and City of Seattle administration buildings, and federal and county courthouses) compared to Alternative DT-2.

Construction of the Midtown Station entrance for Alternative DT-2 could require temporary relocation of tenants and shelter functions in the Y.W.C.A. on 5th Avenue and displace the Hotel Vintage Park due to construction noise. These functions could be restored after construction.

Table ES-6. Key Environmental Impacts of the Downtown Segment Alternatives

Resource Impact Measure	Preferred 5th Avenue/Harrison Street Alternative (DT-1) [a]	6th Avenue/Mercer Street Alternative (DT-2)[a]
Cost	4.7 to 4.9 B	4.9 to 5.0 B
Ridership (daily boardings) [b]	163,700	158,700
Operational Transportation Impacts	14 intersections impacted. Permanent closure of 9th Avenue between Westlake Avenue and Denny Way to provide an entrance plaza for Denny Station.	16 intersections impacted.
Construction Transportation Impacts	Full closure of 4th Avenue (Pine Street to Olive Way) (2 years), the Interstate 5 high-occupancy-vehicle express lanes reversible ramp (9 months), Madison Street (1 to 3 years), Pine Street (6 years), Westlake Avenue (7th Avenue to Denny Way) (4 years), Harrison Street (6th Avenue North to Dexter Avenue North) (4 years), and Republican Street (5 years). Partial closure of 5th Avenue (6 years), 4th Avenue (James Street to Columbia Street and Marion Street to Madison Street) (6 years), Madison Street/4th Avenue intersection (4 years), Pike Street (6 years), Westlake Avenue (at intersections at 8th Avenue and 9th Avenue/ Blanchard Street) (9 months) and Harrison Street (Dexter Avenue North to 8th Avenue North) (1.5 years). The closure of Westlake Avenue south of Denny Way would impact this segment of the Seattle Streetcar. Other segments of the streetcar (through South Lake Union, Downtown, and Capitol Hill/First Hill) may continue to operate but not as a connected system. Could require short-term deactivation of Metro trolley bus wire along Pine Street, Madison Street, and 1st Avenue North.	Full closure of 6th Avenue (Olive Way to Stewart Street) (6 years), Pine Street (4 years), Terry Avenue North (4 years), and Taylor Avenue North (4 years). Partial closure of 6th Avenue (University Street to Madison Street) (1 year), the southbound Interstate 5 off-ramp to James Street (6 years), the southbound Interstate 5 mainline near Madison Street (nights), and Mercer Street (3.5 years). The closure of the Terry Avenue North and Thomas Street intersection would impact this segment of the Seattle Streetcar. Northbound travel of the streetcar would be impacted. Could require short-term deactivation of Metro trolley bus wire along Mercer Street.
Potential Displacements	Residential: 26 Business: 44 to 46 Employee: 480 to 490	Residential: 167 Business: 47 Employee: 440
Potential Operational Vibration or Groundborne Noise Impacts before Mitigation (all impacts can be mitigated) [c]	4	36
Historic Properties with Adverse Effects [d]	3	9
Park and Recreational Resources Impacts (acres operational/acres construction)	0.4/1.4	0.6/<0.1

[a] Ranges reflect differences between construction methods and differences from connecting to different alternatives in adjacent segments. Cost range is due to Preferred Alternative DT-1 costing more when connecting to Alternative CID-1a*, Option CID-1b*, and Option CID-2b. Alternative DT-2 would cost more when connecting to Alternative CID-2a.

[b] The ridership is the total for the new Downtown stations and the existing Pioneer Square, University Street, and Westlake stations.

[c] The numbers presented are the number of units, counted by individual residences, including individual units of multi-family structures, and number of structures for other uses, like schools, churches, and parks.

[d] Potentially adversely affected under Section 106 (to be confirmed through consultation with State Historic Preservation Officer).

Link light rail train at the existing Westlake Station in downtown Seattle

Preferred Alternative DT-1 Denny Station area at the intersection of Westlake Avenue and Denny Way

ES.3.1.2.4. South Interbay Segment

The South Interbay Segment includes the area between 2nd Avenue West in Uptown and West Dravus Street (west of 17th Avenue West) and West Barrett Street (east of 17th Avenue West) in Interbay. There are three alternatives in the segment. They exit the downtown tunnel and become elevated (or a combination of elevated and in a retained cut) to generally follow the existing transportation corridors of Elliott Avenue West, 15th Avenue West, and the BNSF Railway tracks. Figures ES-39 to ES-41 provide a summary of the alternatives and the connections between these alternatives and alternatives in adjacent segments. The pink color is used for preferred alternatives, brown is used for preferred alternatives with third-party funding, and blue is used for other alternatives. The figures also show the South Interbay Segment alternatives in plan view and in profile view. The South Interbay Segment alternatives are shown together on Figure ES-42.

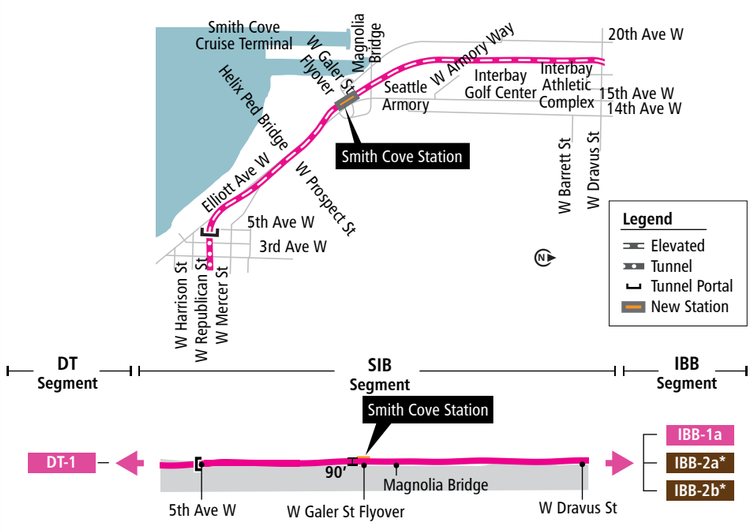
Visual Simulation of Preferred Alternative SIB-1 looking south from Interbay Golf Center

Figure ES-39. South Interbay Segment - Preferred Galer Street Station/Central Interbay Alternative (SIB-1)

Preferred Galer Street Station/Central Interbay (SIB-1)

Alignment: Exits the downtown tunnel at West Republican Street and would continue along Elliott Avenue West to an elevated Smith Cove Station. The elevated guideway would cross over the Magnolia Bridge before continuing north between the BNSF Railway tracks and the Interbay Golf Center and Interbay Athletic Complex.

Station: Smith Cove Station – Elevated above the West Galer Street bridge.



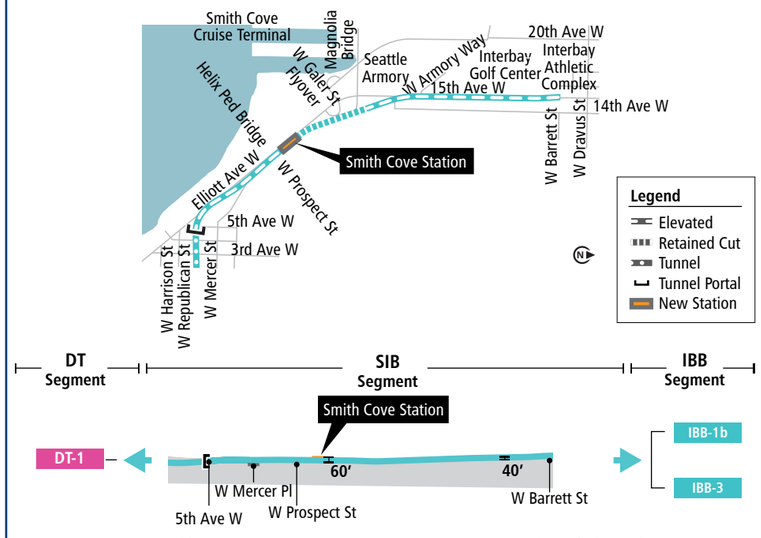
Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Figure ES-40. South Interbay Segment - Prospect Street Station/15th Avenue Alternative (SIB-2)

Prospect Street Station/15th Avenue (SIB-2)

Alignment: Exits the downtown tunnel at West Republican Street and would continue elevated along Elliott Avenue West to an elevated Smith Cove Station. The elevated guideway would continue northeast and then transition to a retained cut along the western edge of the Southwest Queen Anne Greenbelt. It would then transition to elevated guideway in the middle of 15th Avenue West between West Newton Street and West Barrett Street.

Station: Smith Cove Station – Elevated on the east side of Elliott Avenue West, north of Kinnear Park and West Prospect Street.



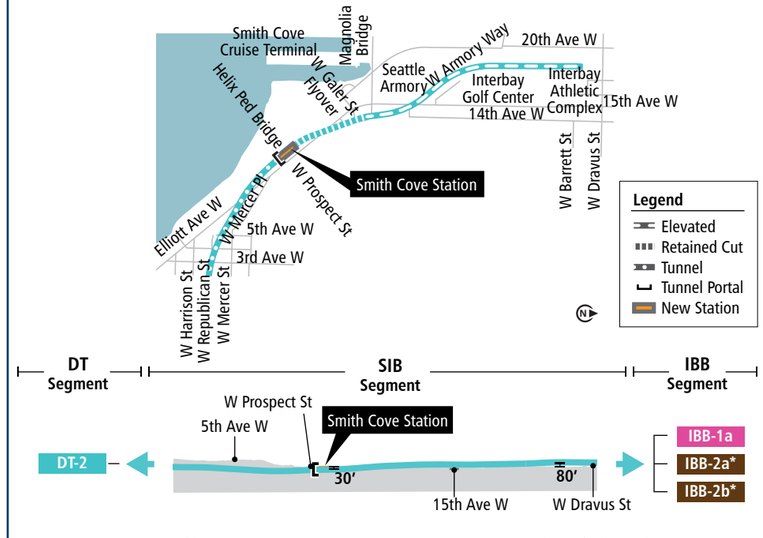
Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Figure ES-41. South Interbay Segment - Prospect Street Station/ Central Interbay Alternative (SIB-3)

Prospect Street Station/Central Interbay (SIB-3)

Alignment: In a retained cut after exiting the downtown tunnel at a portal east of Elliott Avenue West near West Prospect Street, at the north end of Kinnear Park; continuing north to a Smith Cove Station. The guideway would continue north in a retained cut along the edge of the Southwest Queen Anne Greenbelt; transitioning to elevated guideway near West Howe Street, crossing 15th Avenue West, and traveling northwest along the northern side of West Armory Way. It would continue north along the western edge of Interbay Golf Center and Interbay Athletic Complex and then continue over West Dravus Street.

Station: Smith Cove Station – Retained cut north of West Prospect Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

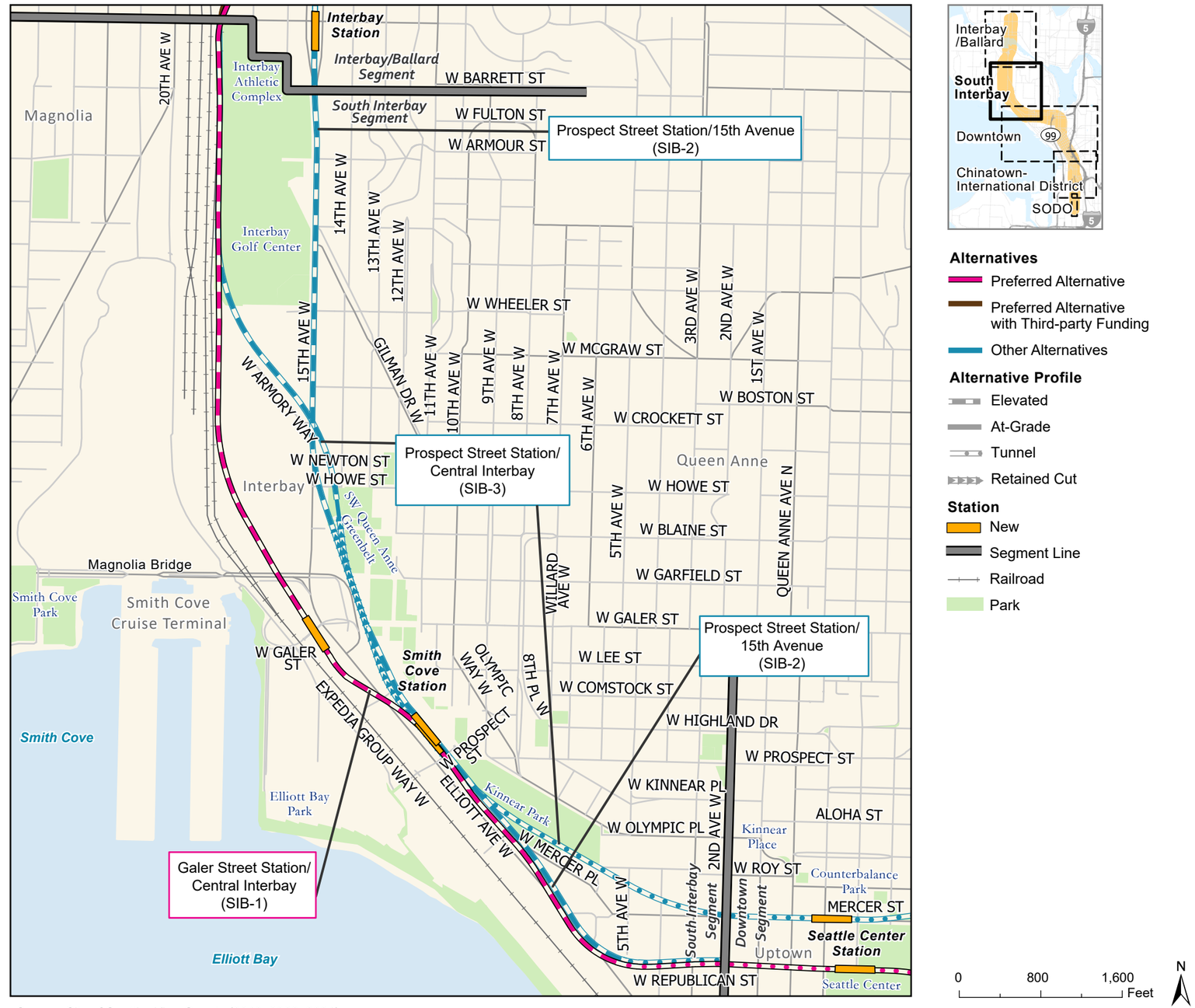
Comparison of South Interbay Segment Alternatives

Table ES-7 and the following text summarize the key environmental impacts of the South Interbay Segment alternatives. Preferred Alternative SIB-1 and Alternative SIB-2 would have greater residential and business displacements than Alternative SIB-3 because the tunnel portal from the downtown tunnel and the elevated guideway would be along Elliott Avenue West south of West Galer Street. Residential displacements for Preferred Alternative SIB-1 include a temporary tiny house community on Port of Seattle property north of Magnolia Bridge.

Alternative SIB-2 would have the greatest long-term impact on freight movement and access to businesses because the medians on Elliott Avenue West and 15th Avenue West would restrict left-turn access. The Smith Cove Station in Preferred Alternative SIB-1 would better serve more commercial, residential, and industrial areas north of the Magnolia Bridge (including portions of Terminal 91) compared to the other alternatives, which would serve more commercial and industrial areas to the south.

Preferred Alternative SIB-1 and Alternative SIB-3 would both relocate the grass playfields at Interbay Athletic Complex prior to construction. Alternative SIB-3 would have the most impacts to the Interbay Golf Center and would require modification of some of the playable area. Both Alternatives SIB-2 and SIB-3 would impact the edge of the Southwest Queen Anne Greenbelt. While Alternative SIB-3 would impact the greatest area, only Alternative SIB-2 would cause the existing trail system in the greenbelt to be cut off from user access to 15th Avenue West. Alternative SIB-3 would require relocation of the United States Postal Service Interbay Post Office and Carrier Annex, and a Seattle Parks and Recreation Department maintenance warehouse. Alternative SIB-2 would permanently displace some parking spaces at both the Interbay Post Office and Carrier Annex and the Seattle Parks and Recreation West Central Grounds Maintenance Facility. Preferred Alternative SIB-1 and Alternative SIB-2 would displace the temporary Elliott Junction shelter, and residents might need to be relocated. If the Smith Cove Station were operated as a terminus station of an M.O.S., then it would have a little more than three times as many riders due to the additional bus service connections to this terminus station.

Figure ES-42. South Interbay Segment Alternatives, Ballard Link Extension



Source: City of Seattle, King County (2019, 2020, 2021).

Table ES-7. Key Environmental Impacts of the South Interbay Segment Alternatives

Resource Impact Measure	Preferred Galer Street Station/Central Interbay Alternative (SIB-1) [a]	Prospect Street Station/15th Avenue Alternative (SIB-2) [a]	Prospect Street Station/Central Interbay Alternative (SIB-3)[a]
Cost	1.3 B	1.4 to 1.5 B	1.5 to 1.6 B
Ridership (daily boardings)	2,600 M.O.S.: 8,200	2,600 M.O.S.: 8,200	2,600 M.O.S.: 8,200
Operational Transportation Impacts	1 intersection impacted (+1 with M.O.S.). Medians along Elliott Avenue West would restrict left-turn access from Elliott Avenue West.	1 intersection impacted (+1 with M.O.S.). Guideway in Elliott Avenue West and 15th Avenue West would remove left-turn access to properties from these streets.	1 intersection impacted (+2 with M.O.S.).
Construction Transportation Impacts	Full closure of the West Galer Street Flyover (nights/weekends) and West Republican Street (5 years). Partial closure of Elliott Avenue West (1.5 years).	Full closure of West Republican Street (5 years). Partial closure of Elliott Avenue West (9 months) and 15th Avenue West (1 year).	Partial closure of Elliott Avenue West (nights/ weekends) and 15th Avenue West (9 months).
Potential Displacements	Residential: 174 Business: 33 (+3 with M.O.S.) Employees: 280 (+50 with M.O.S.)	Residential: 123 Business: 35 (+3 with M.O.S.) Employees: 290 to 300 (+50 with M.O.S.)	Residential: 5 Business: 25 (+3 with M.O.S.) Employees: 320 (+50 with M.O.S.)
Length of Potential Operational Visual Impacts (miles)	0.1	0.4	1.0
Potential Operational Noise Impacts before Mitigation (all impacts can be mitigated) [b]	456	745	532
Potential Operational Vibration or Groundborne Noise Impacts before Mitigation (all impacts can be mitigated) [b]	351	352	0
Wetland Impacts (acres operational/ acres construction)	0.2/0.2	<0.1/<0.1	0.2/0.2
Wetland Buffer Impacts (acres operational/ acres construction)	1.4/0.9	0.5/0	1.9/0.9
Biodiversity Area Impacts (acres operational/acres construction)	0.1/<0.1	3.7 to 3.8/0.3 to 0.5	5.5/0.7
Historic Properties with Adverse Effects [c]	7	8	2
Park and Recreational Resources Impacts (acres operational/acres construction)	3.0 to 3.1/1.0 to 1.5	0.6 to 0.7/0.4	4.0/1.6

[a] Ranges reflect differences from connecting to different alternatives in adjacent segments. The cost range for Alternative SIB-2 is due to the higher cost of connecting to Option IBB-1b. The cost range for Alternative SIB-3 is due to the higher cost of connecting to Preferred Alternative IBB-2a* and Preferred Option IBB-2b*.

[b] The numbers presented are the number of units, counted by individual residences, including individual units of multi-family structures, and number of structures for other uses, like schools, churches, and parks.

[c] Potentially adversely affected under Section 106 (to be confirmed through consultation with State Historic Preservation Officer).

Downtown Bellevue tunnel portal

ES.3.1.2.5. Interbay/Ballard Segment

The Interbay/Ballard Segment includes the area between West Dravus Street (west of 17th Avenue West) and West Barrett Street (east of 17th Avenue West) in Interbay to Northwest 58th Street in Ballard. All alternatives would have two stations: Interbay and Ballard. There are three alternatives in the segment, which generally follow the existing transportation corridors of 15th Avenue West, 15th Avenue Northwest, and 14th Avenue Northwest. Two of the alternatives are elevated and include bridges over Salmon Bay, and one alternative is a tunnel under Salmon Bay. There is a design option for one of the elevated alternatives to connect to a different alternative in the adjacent segment. The tunnel alternative also has a design option with a different potential Ballard Station location. A tunnel in the Interbay/Ballard Segment was not included in the Sound Transit 3 Plan; therefore, third-party funding could be required for the tunnel alternatives. Figures ES-43 through ES-47 provide a summary of the alternatives and the connections between these alternatives and alternatives in the South Interbay Segment. The pink color is used for preferred alternatives, brown is used for preferred alternatives with third-party funding, and blue is used for other alternatives. The figures also show the Interbay/Ballard Segment alternatives in plan view and in profile view. The Interbay/Ballard Segment alternatives are shown together on Figure ES-48.

Visual Simulation of Preferred Alternative IBB-1a crossing Salmon Bay looking northwest from West Emerson Street and 13th Avenue West

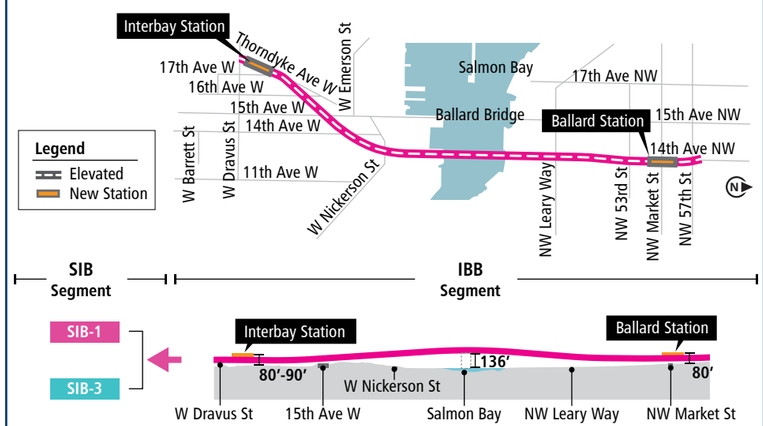
Figure ES-43. Interbay/Ballard Segment - Preferred Elevated 14th Avenue Alternative (IBB-1a)

Preferred Elevated 14th Avenue (IBB-1a)

Alignment: Crosses over West Dravus Street, curving northeast to Interbay Station; continuing northeast over the West Emerson Street interchange and over Salmon Bay on a high-level fixed-span bridge on the east side of the Ballard Bridge. The bridge over Salmon Bay would have a clearance of approximately 136 feet; however, the height of the bridge could be adjusted through coordination with the United States Coast Guard. Elevated guideway would continue north within the 14th Avenue Northwest right-of-way, transitioning to the east edge of the road before Northwest Market Street.

Stations:

- **Interbay Station:** Elevated just north of West Dravus Street between the railroad tracks and 17th Avenue West.
- **Ballard Station:** Elevated and on the east side of 14th Avenue Northwest, straddling Northwest Market Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

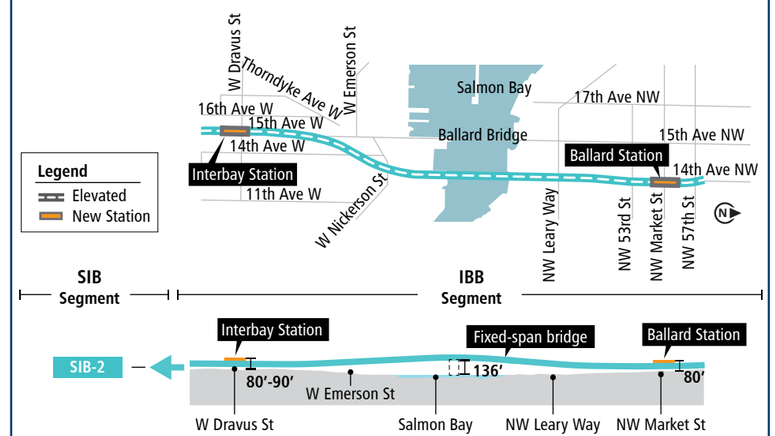
Figure ES-44. Interbay/Ballard Segment - Elevated 14th Avenue Alignment Option (from Prospect Street Station/15th Avenue) (IBB-1b)

Elevated 14th Avenue Alignment Option (from Prospect Street Station/15th Avenue) (IBB-1b)

Alignment: Similar to Preferred Alternative IBB-1a, except it would start north of the Interbay Station, extending northeast of the intersection of 15th Avenue West and West Emerson Street on elevated guideway, connecting to the 14th Avenue bridge over Salmon Bay. The height of the bridge could be adjusted through coordination with the United States Coast Guard.

Stations:

- **Interbay Station:** Same as Alternative IBB-3.
- **Ballard Station:** Same as Preferred Alternative IBB-1a.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

View east of Ballard Bridge looking north across Salmon Bay towards Ballard

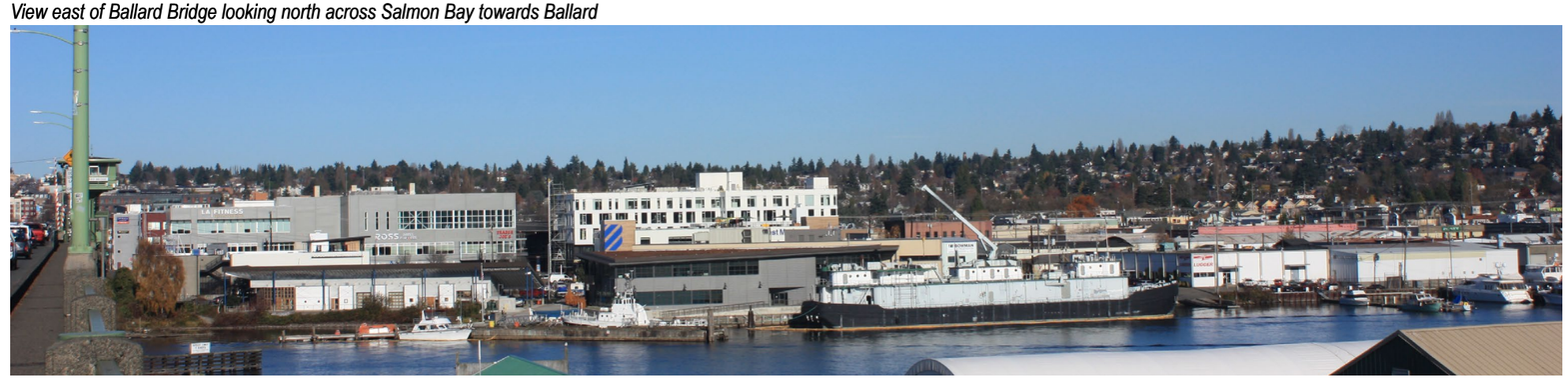


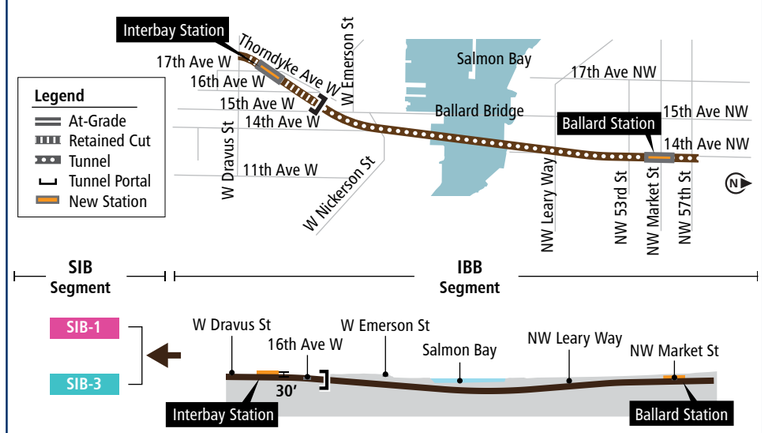
Figure ES-45. Interbay/Ballard Segment - Preferred Tunnel 14th Avenue Alternative (IBB-2a)*

Preferred Tunnel 14th Avenue (IBB-2a)*

Alignment: The guideway would cross under West Dravus Street and enter a retained cut before the Interbay Station; entering a tunnel portal east of Thorndyke Avenue West, traveling under Salmon Bay to 14th Avenue Northwest. The tunnel would continue north to the Ballard Station.

Stations:

- **Interbay Station:** Retained cut north of West Dravus Street, between 17th Avenue West and Thorndyke Avenue West.
- **Ballard Station:** Tunnel under 14th Avenue Northwest and Northwest Market Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

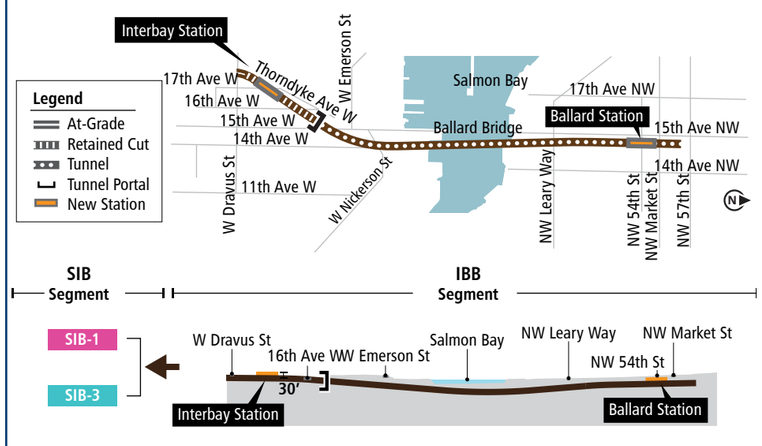
Figure ES-46. Interbay/Ballard Segment - Preferred Tunnel 15th Avenue Station Option (IBB-2b)*

Preferred Tunnel 15th Avenue Station Option (IBB-2b)*

Alignment: Similar to Preferred Alternative IBB-2a* until heading north under Salmon Bay, just north of West Nickerson Street; continuing in a tunnel east of 15th Avenue Northwest to the Ballard Station.

Stations:

- **Interbay Station:** Same as Preferred Alternative IBB-2a*.
- **Ballard Station:** Tunnel east of 15th Avenue Northwest and south of Northwest Market Street.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

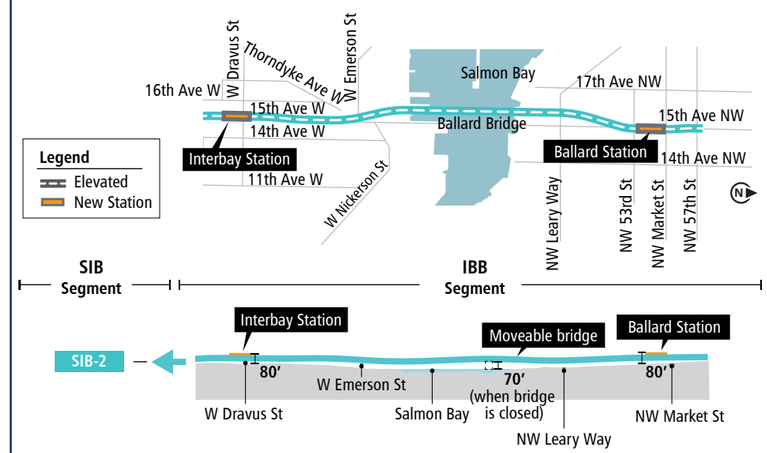
Figure ES-47. Interbay/Ballard Segment - Elevated 15th Avenue Alternative (IBB-3)

Elevated 15th Avenue (IBB-3)

Alignment: Elevated at West Barrett Street in the median of 15th Avenue West, continuing to the Interbay Station; crossing to the west side of 15th Avenue West north of the station. The elevated guideway would continue over the West Emerson Street interchange, crossing the eastern edge of Fishermen's Terminal before crossing Salmon Bay on a moveable bridge west of the Ballard Bridge. The bridge over Salmon Bay would have a clearance of approximately 70 feet when closed; however, the height of the bridge could be adjusted through coordination with the United States Coast Guard. The alternative would continue north on the west side of 15th Avenue Northwest and then transition to the east edge of 15th Avenue Northwest to an elevated Ballard Station on the south side of Northwest Market Street.

Stations:

- **Interbay Station:** Elevated above 15th Avenue West, straddling West Dravus Street.
- **Ballard Station:** Elevated above the east edge of 15th Avenue Northwest.



Diagrams are not to scale and all measurements are approximate for illustration purposes only.

Visual simulation of Alternative IBB-3 crossing Salmon Bay looking east from a dock at Fishermen's Terminal

Construction of East Link guideway across Interstate 405

Comparison of Interbay/Ballard Segment Alternatives

Table ES-8 and the following text summarize key environmental impacts of the Interbay/Ballard Segment alternatives. All of the bridge alternatives (Preferred Alternative IBB-1a, Option IBB-1b, and Alternative IBB-3) in this segment would displace businesses (and their employees) that are water-dependent or that support water-dependent businesses, which could be difficult to relocate. The displacement of these businesses could impair the operations of waterway transportation and shipment of goods. As a result, there could be a broader effect on regional jobs and income than the jobs and businesses displaced directly by the project.

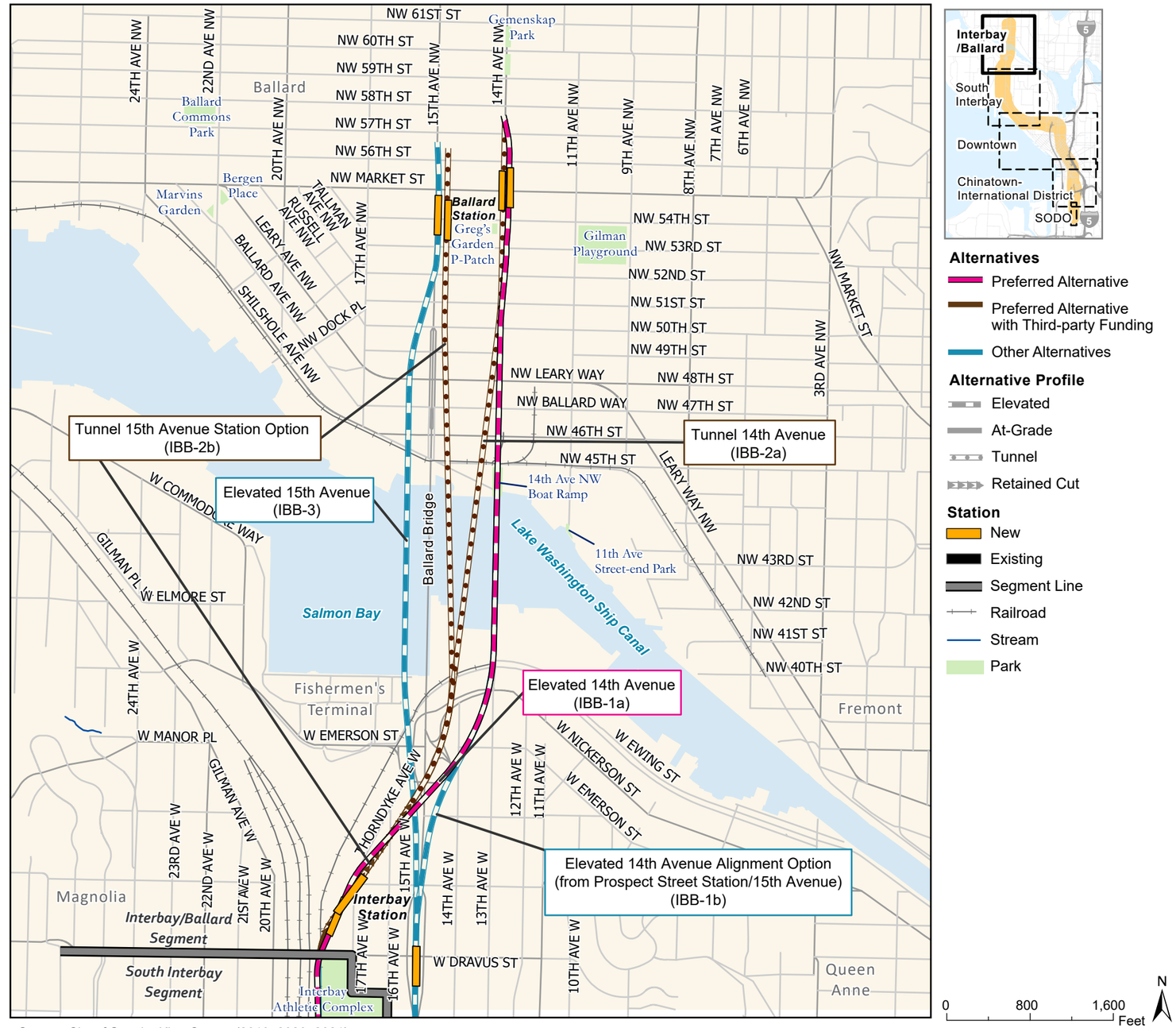
Preferred Alternative IBB-1a, Option IBB-1b, Preferred Alternative IBB-2a*, and Preferred Option IBB-2b* would all displace the Safeway grocery store in Ballard. Preferred Alternative IBB-2a* and Preferred Option IBB-2b* would also displace a Seattle Housing Authority low-income housing building. Preferred Alternative IBB-1a and Option IBB-1b would displace a daycare center. Preferred Alternative IBB-1a and Option IBB-1b would also displace the 14th Avenue Northwest Boat Ramp, which would be relocated nearby prior to construction.

All of the bridge alternatives would meet or exceed the governing limitations on the Lake Washington Ship Canal by meeting the vertical clearance of the Aurora Bridge and by exceeding the horizontal clearance of the Ballard Locks. However, with the exception of the double-leaf bascule bridge for Alternative IBB-3, they would become the first vertical restriction on the Ship Canal upstream of Shilshole Bay. Preferred Alternative IBB-1a and Option IBB-1b would reduce moorage in Salmon Bay. Guideway columns in Salmon Bay for Alternative IBB-3 would introduce new constraints on access between the navigation channel and Fishermen's Terminal, and would also reduce moorage in Salmon Bay and Fishermen's Terminal. Preferred Alternative IBB-1a, Option IBB-1b, and Alternative IBB-3 would require one or two short-term closures (of 12 to 48 hours) of the navigation channel during construction. They would also require additional intermittent closures of part of the navigation channel for up to approximately 4 weeks during construction. Scaffolding and/or netting under the bridge during construction of any of the alternatives would temporarily reduce the vertical clearance, and some vessels would not be able to pass under portions of the bridge. All bridge alternatives would require closures of the area outside the navigation channel during construction, impacting vessel movement and access.

The bridge alternatives would have a visual impact on views from Salmon Bay toward the Ballard Bridge by water-based recreationists. Through design review in coordination with the City of Seattle, Sound Transit would consider measures to minimize impacts to visual quality from the bridge alternatives, such as design guidelines and context-sensitive design. The tunnel alternatives would have no visual impacts.

Alternative IBB-3 would have the greatest shoreline and in-water (benthic surface) impacts. The Muckleshoot Indian Tribe is signatory to both the Treaty of Point Elliott and the Treaty of Medicine Creek. The Muckleshoot Indian Tribe has treaty-protected fishing rights and Usual and Accustomed Areas in the Puget Sound region, which

Figure ES-48. Interbay/Ballard Segment Alternatives, Ballard Link Extension



Source: City of Seattle, King County (2019, 2020, 2021).

includes Salmon Bay. The Suquamish Tribe is signatory to the Treaty of Point Elliott and uses Salmon Bay to access its Usual and Accustomed Areas. Tribal treaty-protected fishing rights of the Muckleshoot Indian Tribe may be temporarily affected by construction of all bridge alternatives over Salmon Bay and could be permanently affected by guideway columns in the water. Access to the Usual and Accustomed Areas of the Suquamish Tribe may be similarly affected. The tunnel alternatives would not impact Tribal treaty-protected fishing rights or access.

All of the alternatives would adversely affect historic properties, but Alternative IBB-3 would affect the most properties and would also adversely affect the Fishermen's Terminal Historic District.

Table ES-8. Key Environmental Impacts of the Interbay/Ballard Segment Alternatives

Resource Impact Measure	Preferred Elevated 14th Avenue Alternative (IBB-1a) [a]	Prospect Street Station/15th Avenue) (IBB-1b)	Preferred Tunnel 14th Avenue Alternative (IBB-2a)*	Preferred Tunnel 15th Avenue Station Option (IBB-2b)*	Elevated 15th Avenue Alternative (IBB-3) [a]
Cost	1.5 to 1.6 B	1.6 B	1.5 B	1.7 B	1.5 B
Ridership (daily boardings)	17,300	17,300	17,300	17,300	17,300
Operational Transportation Impacts	1 intersection impacted. Existing median on 14th Avenue Northwest removed.	1 intersection impacted. Existing median on 14th Avenue Northwest removed.	1 intersection impacted. Access modifications to 17th Avenue West and 16th Avenue West in the vicinity of Interbay Station, affecting access to a number of properties.	1 intersection impacted. Access modifications to 17th Avenue West and 16th Avenue West in the vicinity of Interbay Station, affecting access to a number of properties.	1 intersection impacted. Access modifications along 15th Avenue Northwest that would change vehicular access between Northwest 56th Street and Northwest 57th Street. The moveable bridge would be required to open for certain marine vessels to pass through. This would interrupt light rail service and cause service delays.
Construction Transportation Impacts	Full closure of 15th Avenue West (nights/weekends), West Emerson Street (1.5 years), and 14th Avenue Northwest (3 years), and Northwest 54th Street (3 years). Limited pedestrian and bicycle access to the future Burke-Gilman Trail Missing Link. The Ship Canal Trail would also be closed multiple times for short durations.	Full closure of West Dravus Street on- and off-ramps to 15th Avenue West (3 years intermittently in 1-month increments), 15th Avenue West (nights/weekends), West Emerson Street (1 year), 14th Avenue Northwest (3 years), and Northwest 54th Street (3 years). Partial closure of 15th Avenue West (6 months). Limited pedestrian and bicycle access to the future Burke-Gilman Trail Missing Link. The Ship Canal Trail would also be closed multiple times for short durations.	Full closure of 14th Avenue Northwest (3 years), Northwest 54th Street (3 years), and Northwest 56th Street (3 years). Partial closure of 15th Avenue West (6 months). Could require short-term deactivation of the Metro trolley bus wire along Northwest Market Street.	Full closure of Northwest 52nd Street (4 years) and Northwest 54th Street (4 years). Partial closure of 15th Avenue West (6 months)and Northwest Market Street (3 years).	Full closure of 15th Avenue West (nights/weekends), West Dravus Street on- and off-ramps to 15th Avenue West (3 years intermittently in 1-month increments), Northwest 52nd Street (nights/weekends), Northwest 54th Street (3 years), 15th Avenue Northwest (nights and weekends) and Northwest Market Street (nights/weekends). Partial closure of 15th Avenue West (6 months) and 15th Avenue Northwest (3 months). Limited pedestrian and bicycle access to the future Burke-Gilman Trail Missing Link. The Ship Canal Trail would also be closed multiple times for short durations.
Potential Displacements	Residential: 94 to 105 Business: 64 to 71 Employees: 540 to 610	Residential: 151 Business: 57 Employees: 400	Residential: 14 Business: 41 Employees: 380	Residential: 21 Business: 43 Employees: 370	Residential: 25 Business: 51 Employees: 620
Length of Potential Operational Visual Impacts (miles)	0.1	0.1	0	0	0.2
Potential Operational Noise Impacts before Mitigation (all impacts can be mitigated) [b]	369 to 378	705	0	0	356
Potential Operational Vibration or Groundborne Noise Impacts before Mitigation (all impacts can be mitigated) [b]	35 to 39	43	2	1	0
Shoreline Impacts (linear feet operational/ linear feet construction)	400 [c]/1,100 [d]	400 [c]/1,100 [d]	0/0	0/0	500/900
In-water (Benthic surface) Impacts (acres operational/acres construction)	0.8 to 1.2 [e]/0.5 to 1.5 [f]	0.8 to 1.2 [e]/0.5 to 1.5 [f]	0/0	0/0	0.2 to 0.8/0.7 to 1.7
Historic Properties and Historic Districts with Adverse Effects [g]	7	7	4	3	10
Park and Recreational Resources Impacts (acres operational/acres construction)	0.6/0	0.6/0	0/0	0/0	0/0

[a] Ranges reflect differences from connecting to different alternatives in adjacent segments and differences in in-water impacts from different bridge types. The cost range for Preferred Alternative IBB-1a is due to the higher cost of connecting to Alternative SIB-3.

[b] The numbers presented are the number of units, counted by individual residences, including individual units of multi-family structures, and number of structures for other uses, like schools, churches, and parks.

[c] These shoreline impacts include 74 linear feet of permanent impact from the relocation of the 14th Avenue outfall and 64 linear feet associated with relocation of the 14th Avenue Northwest Boat Ramp.

[d] These shoreline impacts include 116 linear feet of temporary impact associated with the relocation of the 14th Avenue outfall and 91 linear feet of impact associated with relocation of the 14th Avenue Northwest Boat Ramp.

[e] These in-water impacts include 0.1 acre of permanent impact associated with the relocation of the 14th Avenue outfall and <0.1 acre of impact associated with relocation of the 14th Avenue Northwest Boat Ramp.

[f] This area includes 0.5 acre of temporary impact associated with the relocation of the 14th Avenue outfall and 0.1 acre of impact associated with relocation of the 14th Avenue Northwest Boat Ramp.

[g] Potentially adversely affected under Section 106 (to be confirmed through consultation with State Historic Preservation Officer).

ES.3.2. No Build Alternative

The No Build Alternative includes the transportation system and environment as they would exist in 2042 without the project, and it provides a baseline condition for comparing impacts of the Build Alternatives. The year 2042 is used as the analysis year because it is consistent with Puget Sound Regional Council's 2040 planning horizon year and aligns with full buildout of the light rail capital projects included in the Sound Transit 3 Plan under the realignment target schedule. Under the affordable schedule, only south Kirkland to Issaquah would not be complete by 2042. The No Build Alternative includes projects and funding packages in the central Puget Sound region that are planned to occur with or without the WSBLE Project. No Build Alternative improvements include transit, roadway, and other transportation actions by state, regional, and local agencies that are currently funded or committed, and those that are likely to be implemented based on approved and committed funding. Section 2.2, No Build Alternative, of Chapter 2 identifies the major rail improvements assumed as part of the No Build Alternative.

ES.4 Avoidance, Minimization, and Mitigation Measures

Sound Transit will comply with applicable federal, state, and local environmental regulations and apply reasonable mitigation measures to reduce significant adverse impacts. The Draft Environmental Impact Statement identifies potential measures to mitigate long-term and construction adverse impacts of the project alternatives as well as avoidance and minimization measures that would be part of the project. These measures would be refined through final design and permitting. The FTA will issue the NEPA Record of Decision (ROD) after the Final Environmental Impact Statement that will include a list of all committed mitigation measures for the project to be built.

The following is a summary of select potential mitigation measures for impacts that the project alternatives may not be able to fully minimize or avoid.

Transportation: Mitigation would be needed at a number of intersections to mitigate the long-term impact of reduced level of service. Mitigation could include corridor signal optimization, upgraded signal technologies, implementation of corridor intelligent transportation system strategies, traffic movement and turn restrictions, or adding vehicle and non-motorized capacity to reduce intersection congestion, where feasible. Sound Transit would develop Construction Access and Traffic Management Plans for the overall project, and for Seattle Center specifically, to mitigate impacts to roadways during construction. Sound Transit would continue to coordinate with transit service providers to maintain efficient transit operations. Long-term impacts to Metro's Ryerson, Central, and Atlantic bus bases would be addressed through ongoing coordination between Sound Transit, the Seattle Department of Transportation, Metro, and the FTA to identify capital, routing, alternative base locations and capacity, and access management strategies that would be implemented before transit service operations would be affected. During construction where roadways are closed, Sound Transit would coordinate with Metro, the City of Seattle, and the FTA on bus service and associated infrastructure modifications and transit facility improvements that maintain transit service and access through construction areas. Buses would be rerouted to nearby streets where appropriate to maintain transit service and temporary bus facilities may need to be installed. Sound Transit would coordinate with the City of Seattle, FTA, and Metro to minimize construction impacts to the Seattle Streetcar. A Seattle Streetcar WSBLE Construction Operations Plan would be developed to evaluate operational scenarios and capital investments to minimize impacts.

Existing or planned designated bicycle facilities or routes may be permanently impacted by the project. Sound Transit would work with the City of Seattle to rebuild affected facilities or develop alternate facilities or routes. Pedestrian facilities would also be permanently impacted, and Sound Transit would fund improvements to mitigate these impacts, such as widened sidewalks or new walkways, as well as associated treatments that may be required for safe operations. Sound Transit would coordinate with the City of Seattle to develop event management plans for the Seattle Center and International District/Chinatown stations to identify crowd management strategies during potentially heavier transit ridership periods associated with events at the nearby venues or stadiums. During construction, Sound Transit would minimize potential effects on pedestrian and bicycle facilities by providing clearly marked detours within construction areas, which at minimum would comply with Americans with Disabilities Act requirements. When maintaining a facility would not be feasible, Sound Transit would work with the City of Seattle to develop and implement a construction management plan to provide alternate facilities for non-motorized travel.

Sound Transit would comply with navigation mitigation requirements identified by the Muckleshoot Indian Tribe, the Suquamish Tribe, the United States Coast Guard, and the United States Army Corps of Engineers through the bridge permitting process. Sound Transit has prepared Navigation Impact Reports for the United States Coast Guard for the Duwamish Crossing and Salmon Bay. Sound Transit would develop a construction navigation management plan in consultation with the United States Coast Guard, the United States Army Corps of Engineers, and Port of Seattle to mitigate impacts to navigation during construction.

Visual: Sound Transit would use visual enhancement measures to mitigate adverse visual impacts where they would occur, such as planting screening vegetation where appropriate and replanting vegetation that would not conflict with the light rail operations to replace vegetation removed for construction.

Noise: Noise impacts from light rail operation would be mitigated by building sound walls, using wheel squeal reduction measures and special trackwork, installing building sound insulation, and other measures. For construction staging areas near tunnel portals, mitigation measures could include construction of temporary noise barriers adjacent to the staging area.

Vibration: Sound Transit would install high-resilience fasteners or other low-vibration specialized track work to reduce vibration or groundborne noise from light rail operation, where necessary. Continuous-mat floating slabs are recommended where impacts are predicted at highly sensitive land uses and high-resilience fasteners would not provide sufficient mitigation.

Ecosystems: During final design and permitting, Sound Transit would first try to avoid and minimize long-term and construction in-water impacts and impacts on wetlands, fisheries and benthic surface, streams and stream buffers, and vegetation and wildlife habitat through design measures and best management practices. Where impacts are unavoidable, Sound Transit will mitigate them in accordance with applicable federal regulations, local critical area ordinances, and permit requirements. Sound Transit will provide compensatory mitigation to achieve no net loss of ecosystem function and acreage and will either use the in-lieu fee program through the King County Mitigation Reserves Program, approved mitigation banks through the Port of Seattle, offsite compensatory mitigation, or project-specific mitigation developed concurrently by Sound Transit and approved by appropriate regulatory agencies to mitigate impacts.

Historic: Where adverse effects to National Register-eligible or -listed resources cannot be avoided or minimized, FTA and Sound Transit would develop a memorandum of agreement or programmatic agreement in consultation with the Washington State Historic Preservation Officer, Tribes, and other consulting parties under Section 106 of the National Historic Preservation Act. Mitigation that could be included in the agreement includes documenting historic properties or resources that would be impacted, installing interpretive/educational signage, or other options that provide a direct public benefit (e.g., exhibits, HistoryLink essays, documentaries, or historic property nominations), and implementing data recovery of architectural information and materials. An archaeological resources monitoring and inadvertent discovery plan would be prepared.

Parks: Sound Transit would work with the City to identify appropriate property for replacement where park property would be permanently acquired, consistent with City of Seattle Ordinance 118477. The ordinance states that park land acquired must be replaced with land of equivalent or better size, value, location, and usefulness. Sound Transit would restore temporarily disturbed parks and recreational resources to pre-project conditions after construction, in cooperation with the resource owner. Other measures to mitigate affected resources could include financial compensation or park enhancement, where appropriate.

ES.5 Significant and Unavoidable Adverse Impacts

With the avoidance, minimization, and potential mitigation measures described in Chapter 3, Transportation Environment and Consequences, and Chapter 4, Affected Environment and Environmental Consequences, significant adverse impacts would be avoided or minimized for most alternatives. Long-term permanent impacts that could be significant and unavoidable for the West Seattle and Ballard Link Extensions are described in the following sections.

ES.5.1. West Seattle Link Extension

Permanent impacts that could be significant and unavoidable for particular West Seattle Link Extension alternatives include the following:

- Displacement of water-dependent businesses on the Duwamish Waterway and ripple effects on other maritime-related businesses (Preferred Alternative DUW-1a, Option DUW-1b, and Alternative DUW-2). Water-dependent uses have unique characteristics or uses that could be difficult to relocate and could require constructing new facilities. Some water-dependent facilities might not be able to be relocated.
- Visual impacts from elevated guideway in the Delridge Segment (Preferred Alternative DEL-1a, Option DEL-1b, Preferred Alternative DEL-2a*, Option DEL-2b*, Alternative DEL-3, and Alternative DEL-4*).

Some temporary impacts during construction would not be avoidable and could be significant and adverse in some locations. These impacts would include temporary but long-term lane or roadway closures, and noise and vibration. Detour routes could reduce the impact of roadway closures, although delays, congestion, and inconvenience would still occur. Road closures would also require temporary Metro bus diversions. Connection of the SODO Segment alternatives to alternatives in the Chinatown-International District Segment would also temporarily impact operation of existing light rail service. There could be adverse impacts on businesses in the West Seattle Link Extension corridor, especially for businesses adjacent to the alternatives that depend on drive-by traffic. All Duwamish Segment alternatives would require short-term closures of the navigation channel, and netting and scaffolding would temporarily reduce vertical clearance over both waterways.

ES.5.2. Ballard Link Extension

Permanent impacts that could be significant and unavoidable for particular Ballard Link Extension alternatives include the following:

- Navigation channel impacts of a new bridge over Salmon Bay (Preferred Alternative IBB-1a, Option IBB-1b, and Alternative IBB-3). Bridge alternatives would meet or exceed the governing limitations on the United States Army Corps of Engineers-maintained Ship Canal navigation channel; however, a bridge would become the first vertical restriction upstream of Shilshole Bay preventing vessels that require a vertical clearance of more than 136 feet from traveling farther east to the next vertical restriction of the Aurora Bridge.
- Displacement of water-dependent businesses on Salmon Bay and ripple effects on other maritime-related businesses (Preferred Alternative IBB-1a, Option IBB-1b, and Alternative IBB-3). Water-dependent uses have unique characteristics or uses that could be difficult to relocate and may require construction of new facilities. Some water-dependent facilities may not be able to be relocated.

Some temporary impacts during construction would be unavoidable and could be significant and adverse in some locations. These impacts would include temporary but long-term roadway closures (particularly in the Chinatown-International District and Downtown segments). Detour routes could reduce the impact of roadway closures, although delays, congestion, and inconvenience would still occur. Road closures would also temporarily affect a segment of the Seattle Streetcar in the Chinatown-International District and Downtown segments. There would also be temporary noise and vibration impacts. There could be adverse impacts on businesses in the Ballard Link Extension corridor, especially businesses dependent on drive-by traffic that are adjacent to the alternatives. Preferred Alternative IBB-1a, Option IBB-1b, and Alternative IBB-3 would require one or two short-term closures of the navigation channel during construction of the bridge. Scaffolding and/or netting under the bridge during construction of all alternatives would temporarily reduce the vertical clearance, and some vessels would not be able to pass under portions of the bridge.

Construction of retaining wall for Federal Way Link Extension

ES.6 Other Environmental Considerations

ES.6.1. Section 4(f) Resources

Section 4(f) of the United States Department of Transportation Act of 1966 (United States Code Title 49 Section 303[c]) protects publicly owned parks, recreation areas, and wildlife and waterfowl refuges, as well as historic sites. Section 4(f) requires consideration of the following:

- Parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public.
- Wildlife and waterfowl refuges of national, state, or local significance that are publicly owned and open to the public to the extent that public access does not interfere with the primary purpose of the refuge.
- Historic sites of national, state, or local significance in public or private ownership, regardless of whether they are open to the public, that are listed in, or eligible for, the National Register as identified according to Section 106 of the National Historic Preservation Act.
- Archaeological sites in or eligible for inclusion in the National Register, including those discovered during construction, except when the FTA concludes that the archaeological resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place, and the official(s) with jurisdiction over the Section 4(f) resource have been consulted and have not objected (Section 774.13(b)).

Under Section 4(f), the FTA cannot approve the "use" of a Section 4(f) resource unless it determines that:

- There is no feasible and prudent avoidance alternative to the use of land from the property; and the action includes all possible planning to minimize harm to the property resulting from such use; or
- The use of the property, including any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures) committed to by the applicant, will have a *de minimis* impact on the property.

De Minimis Impact

An impact that, after taking into account any measures to minimize harm (such as avoidance, minimization, mitigation or enhancement measures), results in either:

1. A Section 106 finding of no adverse effect on a historic property or no historic properties affected; or
2. A determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f).

Section 4(f) Policy Paper (United States Department of Transportation 2012).

Potential Section 4(f) resources in the study area are described in Sections 3.1 and 4.1 of Appendix H, Draft Section 4(f) Evaluation, and summarized in Sections ES 6.1.1 and 6.1.2 below. Section 4(f) provides for some exceptions of certain types of uses when specific conditions are met. Otherwise, the use of a Section 4(f) property requires an evaluation of whether there would be a feasible and prudent avoidance alternative.

Sections 4.2.18 and 4.3.18 in Chapter 4 summarize the use of Section 4(f) resources and consideration of avoidance alternatives within the West Seattle Link Extension and the Ballard Link Extension, respectively. The Build Alternatives represent Sound Transit's best attempt at avoiding and/or minimizing Section 4(f) resources in the densely developed project corridor. The Build Alternatives balance the purpose and need of the project against potential impacts, while providing a range of alternatives for the public to consider and from which FTA and Sound Transit can choose. As design for the WSBLE Project has progressed, Sound Transit continues to look for opportunities to reduce project impacts, including impacts on Section 4(f) resources.

ES.6.1.1. West Seattle Link Extension

Table ES-9 summarizes the number of Section 4(f) resources within the West Seattle Link Extension study area by segment.

Table ES-9. Summary of 4(f) Resources in the West Seattle Link Extension Study Area

Segment	Number of Park/ Recreational Resources	Number of Historic Resources
SODO	0	5
Duwamish	2	57
Delridge	3	12
West Seattle Junction	3	28
Linear resources spanning multiple segments	0	1

All alternatives in the SODO, Duwamish, Delridge, and West Seattle Junction segments would result in the use of at least one Section 4(f) resource, and there is no full-length project avoidance alternative for the West Seattle Link Extension. The Draft Section 4(f) Evaluation in Appendix H includes a discussion of feasible and prudent avoidance alternatives for all the West Seattle Link Extension Build Alternatives that would result in the individual use of a Section 4(f) resource in each segment. Based on the analysis of potential Section 4(f) resource avoidance alternatives, there are no prudent and feasible avoidance alternatives for the West Seattle Link Extension.

ES.6.1.2. Ballard Link Extension

Table ES-10 summarizes the number of Section 4(f) resources within the Ballard Link Extension study area by segment.

Table ES-10. Summary of 4(f) Resources in the Ballard Link Extension Study Area

Segment	Number of Park/ Recreational Resources	Number of Historic Resources
SODO	0	2
CID	2	53
Downtown	6	103
South Interbay	5	43
Interbay/Ballard	2	58
Linear resources spanning multiple segments	0	2

All alternatives in the SODO, Chinatown-International District, Downtown, South Interbay, and Interbay/Ballard segments would impact a Section 4(f) resource; therefore, there is no full-length project avoidance alternative for the Ballard Link Extension. The Draft Section 4(f) Evaluation in Appendix H includes a discussion of feasible and prudent avoidance alternatives for all the Ballard Link Extension Build Alternatives that would result in the individual use of a Section 4(f) resource in each segment.

The Build Alternatives represent Sound Transit's best attempt at minimizing and avoiding Section 4(f) resources in the densely developed project corridor. The Build Alternatives balance the purpose and need of the project against potential impacts, while providing a range of alternatives for the public to consider and from which FTA and Sound Transit can choose. As design for the WSBLE Project has progressed, Sound Transit continues to look for opportunities to reduce project impacts, including impacts on Section 4(f) resources.

ES.6.2. Environmental Justice

Appendix G, Environmental Justice, of the Draft Environmental Impact Statement assesses whether the WSBLE alternatives would result in disproportionately high and adverse effects on communities of color and/or low-income populations. It also describes engagement with these populations to encourage their active participation in the planning process

and discusses the benefits of the WSBLE Project to these populations. The populations in the West Seattle Link Extension study area are not predominately communities of color or low-income and the percentage of both communities of color and low-income people in the study area are lower than the percentage of these populations in the City of Seattle and the Sound Transit Service District as a whole. Most project impacts would be limited in scope and others would be mitigated through the implementation of effective mitigation measures; see Table 5-2, Summary of Project Impacts and Potential Mitigation – West Seattle Link Extension, in Appendix G, Environmental Justice. The West Seattle Link Extension would not result in disproportionately high and adverse effects on communities of color and low-income people.

The West Seattle Link Extension would include benefits including improved transit access and more efficient and reliable transportation system. The diverse communities of South Delridge, High Point, Westwood, Highland Park, and White Center, south of the project, would benefit from the transit transfer point at the Delridge Station. The Delridge Station would be connected to some of these communities by Metro bus transit routes, including a new RapidRide line, while other communities would be able to transfer at the Avalon or Alaska Junction stations. Communities of color and low-income populations in the West Seattle Link Extension study area, as well the neighborhoods south of the study area, would experience improved access to transit benefits along with everyone else in the study area, including a 16- to 17-minute travel time savings, depending on the station and after accounting for transferring from bus to light rail. These offsetting benefits further support the conclusion that the West Seattle Link Extension would not result in disproportionately high and adverse effects as defined in Executive Order 12898 and the United States Department of Transportation Order 5610.2(a).

With the exception of the Chinatown-International District, the populations in the Ballard Link Extension study area are not predominately communities of color or low-income people and the percentage of both communities of color and low-income populations in the study area are similar to the percentage of these populations in the City of Seattle and the Sound Transit Service District as a whole. Most project impacts would be limited in scope and others would be mitigated through the implementation of effective mitigation measures; see Table 5-4, Summary of Project Impacts and Potential Mitigation – Ballard Link Extension, in Appendix G, Environmental Justice. In addition, distribution of impacts to communities of color and low-income populations would be similar to the distribution of impacts to the general population in the study area.

The Chinatown-International District is the Asian hub of Seattle and its population is almost 60 percent people of color, with almost half low-income. The project would result in adverse impacts to the environmental justice populations in the Chinatown-International District during both operations and construction, as described in Table 5-4, Summary of Project Impacts and Potential Mitigation – Ballard Link Extension, in Appendix G. The adverse effects associated with displacement of businesses and residences would be effectively mitigated by implementation of Sound Transit's real property acquisition and relocation policy and design measures, and best management practices would reduce the severity of potential construction impacts. In addition, Sound Transit is partnering with the community and other agencies on a community-based planning effort for the area to evaluate strategies to maintain and enhance community cohesion as well as strengthen connections between the Chinatown International District, Pioneer Square, and existing transit hub. These efforts are in early phases and will continue during the Final Environmental Impact Statement and final design phases, guided by the community, and informed by the actions of the Sound Transit Board to identify the light rail project to be built. Combined with this mitigation and the offsetting benefits of more frequent and reliable access to transit, jobs, and services throughout Seattle and the region, including in West Seattle, South Lake Union, Uptown, Interbay, and Ballard, impacts would not be high and adverse to environmental justice populations.

Sound Transit and the City of Seattle are partnering on the Racial Equity Toolkit (RET) process for the WSBLE Project. The RET process is designed as a tool to fulfill the City of Seattle's commitment to its Race and Social Justice Initiative. The City of Seattle's Race and Social Justice Initiative is consistent with federal Executive Order 12898, which is the basis for this environmental justice evaluation. The RET lays out a process and a set of questions to guide the development, implementation, and evaluation of the project to advance racial equity.

ES.7 Alternative Development and Public and Agency Involvement

The FTA is relying on the local planning process to inform the environmental review process under NEPA, consistent with federal regulations (Code of Federal Regulations Title 23, Part 450.318)) that allow for it, and the Moving Ahead for Progress in the 21st Century Act and the Fixing America's Surface Transportation Act that encourage it.

The WSBLE Project is the result of a multi-year planning process. After voter approval in 2016 for funding the Sound Transit 3 Plan, which included the WSBLE Project, Sound Transit continued to build on past planning with an Alternatives Development process to identify alternatives to study in the WSBLE Draft Environmental Impact Statement. The Alternatives Development process began with early scoping under SEPA for Washington state in February 2018. Sound Transit published an early scoping notice in the SEPA register on February 2, 2018, which initiated early scoping and started a 30-day comment period. Three public open houses and an agency meeting were held during this comment period, as well as an online open house. Comments received from government entities, Tribes, businesses, and community organizations made specific recommendations on alternatives to the Sound Transit 3 Representative Project and issues to study.

Based on feedback received during early scoping, Sound Transit developed an initial set of alternatives. Sound Transit then conducted a three-level screening process that analyzed and compared the alternatives using evaluation criteria developed from the project's preliminary purpose and need. After each screening analysis was complete, the results were presented to the Stakeholder Advisory Group. The Stakeholder Advisory Group consisted of transit riders, residents, businesses, major institutional organizations, key stakeholders, and members of the public. The Stakeholder Advisory Group recommended alternatives to carry forward to the next level of screening to the Elected Leadership Group. The Elected Leadership Group included elected officials who represent the project corridor and/or the Board. The Elected Leadership Group then made recommendations on which alternatives to study in the next screening level.

There were opportunities for public input between each screening level, which allowed community members to learn more about the alternatives and provide input to the Stakeholder Advisory Group and Elected Leadership Group. Alternatives from the last round of screening were carried forward into the scoping process for the Draft Environmental Impact Statement.

Scoping for this Environmental Impact Statement was conducted under NEPA and SEPA. The scoping process began with a Notice of Intent to prepare an environmental impact statement in the Federal Register on February 12, 2019, and a Determination of Significance in the SEPA Register on February 15, 2019. These notices initiated formal scoping and started a required 30-day comment period through March 18, 2019. The FTA and Sound Transit extended this comment period until April 2, 2019, based on requests from the public and the City of Seattle. Three public scoping meetings and a meeting for agencies and Tribes were held during this period, as well as an online open house from February 15 through April 2, 2019. Sound Transit asked for comments on the preliminary purpose and need statement; the alternatives that Sound Transit should evaluate in the Draft Environmental Impact Statement; and social, economic, environmental, and transportation issues to evaluate in the Draft Environmental Impact Statement.

Following the public scoping period, the Board reviewed the comments received and the alternatives evaluation. In May 2019, the Board approved Motion M2019-51 (Sound Transit Board 2019a), which identified preferred alternatives, preferred alternatives with third-party funding, and other alternatives to study in the Draft Environmental Impact Statement. The Board also directed Sound Transit project staff to conduct an initial assessment of additional alternatives suggested during the scoping period to establish whether further detailed study in the Draft Environmental Impact Statement was appropriate. Following completion of the initial assessment, the Board reviewed the initial assessment findings and public input. Public outreach during the initial assessment included an online open house, distribution of flyers to residences and businesses, information booths at several fairs and festivals, media briefings, project-wide email updates, as well as personalized emails to community groups to notify them about the opportunity to comment online. In October 2019, the Board approved Motion M2019-104 (Sound Transit Board 2019b), which identified additional alternatives to study in the Draft Environmental Impact Statement.

Following the Board motions, Sound Transit continued to refine the conceptual design of the alternatives for evaluation in the Draft Environmental Impact Statement. This resulted in the addition of a design option to the high-level fixed bridge over Salmon Bay (Option IBB-1b) for connecting Alternative SIB-2 in the South Interbay Segment. It also resulted in refinement of the tunnel portal location for Preferred Alternative SIB-1 to avoid contaminated land and to minimize property impacts, thereby eliminating the at-grade profile. Refinements were also made to the alignment of Alternative SIB-2 to minimize property and roadway impacts.

Existing underground Pioneer Square Station

ES.8 Tribal Coordination

Throughout the Alternatives Development process and preparation of the Draft EIS, FTA and Sound Transit have engaged with Tribes with an interest in the WSBLE Project. Consultation with Tribes began on February 2, 2018, when FTA initiated government-to-government consultation. On February 25, 2019, as part of scoping, FTA and Sound Transit invited Tribes to participate in the environmental review process and FTA initiated consultation under Section 106 of the National Historic Preservation Act. FTA and Sound Transit will continue to consult with interested Tribes throughout all phases of the project.

ES.9 Areas of Controversy and Issues to Be Resolved

Areas of controversy and issues to resolve include:

- Funding: Based on information to date, some alternatives could require third-party funding. These alternatives incorporate enhancements to the scope of the Sound Transit 3 Representative Project identified in the Sound Transit 3 Plan (such as tunnels in West Seattle and Alternative CID-1a* and Option CID-1b* that require replacement of the 4th Avenue South Viaduct). Cost estimates prepared for the Draft Environmental Impact Statement reflect increased costs above those anticipated during the Alternatives Development phase. To ensure that funding remains available to complete all voter-approved projects, the Board conducted a “realignment” process that established a program schedule that is affordable, utilizing current financial projections and cost estimates to set the general order in which projects will advance. This “affordable” schedule established an approach to prioritize, fund, and manage program work over time (Resolution 2021-05). In addition, the Board adopted a “target” schedule for priority projects, reliant upon reductions in the affordability gap. To reduce the affordability gap, Sound Transit will pursue expanded financial capacity (Motion M2020-37); develop and implement a cost savings plan; identify cost savings for the Sound Transit budget outside of the capital program; identify opportunities to reduce cost and planning delays; and engage project stakeholders in discussions to address the trade-offs between project scope, schedule, and new financial resources to inform Board decision-making on project schedule.
- West Seattle High-Rise Bridge: The Seattle Department of Transportation closed the West Seattle High-Rise Bridge in March 2020 due to structural issues. In November 2020, the Seattle Department of Transportation announced its intention to repair the current bridge and reopen it, and also to study a long-term replacement bridge. The closure to repair the existing bridge is expected to last until mid-2022. This closure has raised questions about the relationship of a long-term replacement bridge to the WSBLE Project. The repaired existing bridge is expected to have a service life of approximately 40 years; therefore, a long-term replacement bridge is anticipated to be built after the WSBLE Project is constructed. Sound Transit and the Seattle Department of Transportation are coordinating on the relationship between the two projects, and the next steps will be considered as the West Seattle Link Extension project advances.
- Displacement of Public Facilities: In the SODO Segment, Option SODO-1b and Alternative SODO-2 would displace the SODO United States Postal Service Carrier Annex and Distribution Center/Terminal Post Office. Preferred Alternative SODO-1a would affect surface parking at the post office, which the United States Postal Service has indicated would require relocating the facility. The staggered station configuration of Preferred Alternative SODO-1a would avoid permanent impacts (i.e., operation and maintenance) to the United States Postal Service facility. In the South Interbay Segment, Alternative SIB-3 would displace the United States Postal Service Interbay Post Office and Carrier Annex. If a United States Postal Service facility is displaced, Sound Transit would be responsible for environmental review, design, and construction of a replacement facility. The replacement facility would be designed to meet the United States Postal Service’s siting criteria and facility requirements. Impacts of relocating either United States Postal Service facility are yet undefined, and should an alternative that triggers relocation of a United States Postal Service facility move forward, additional environmental review will be conducted

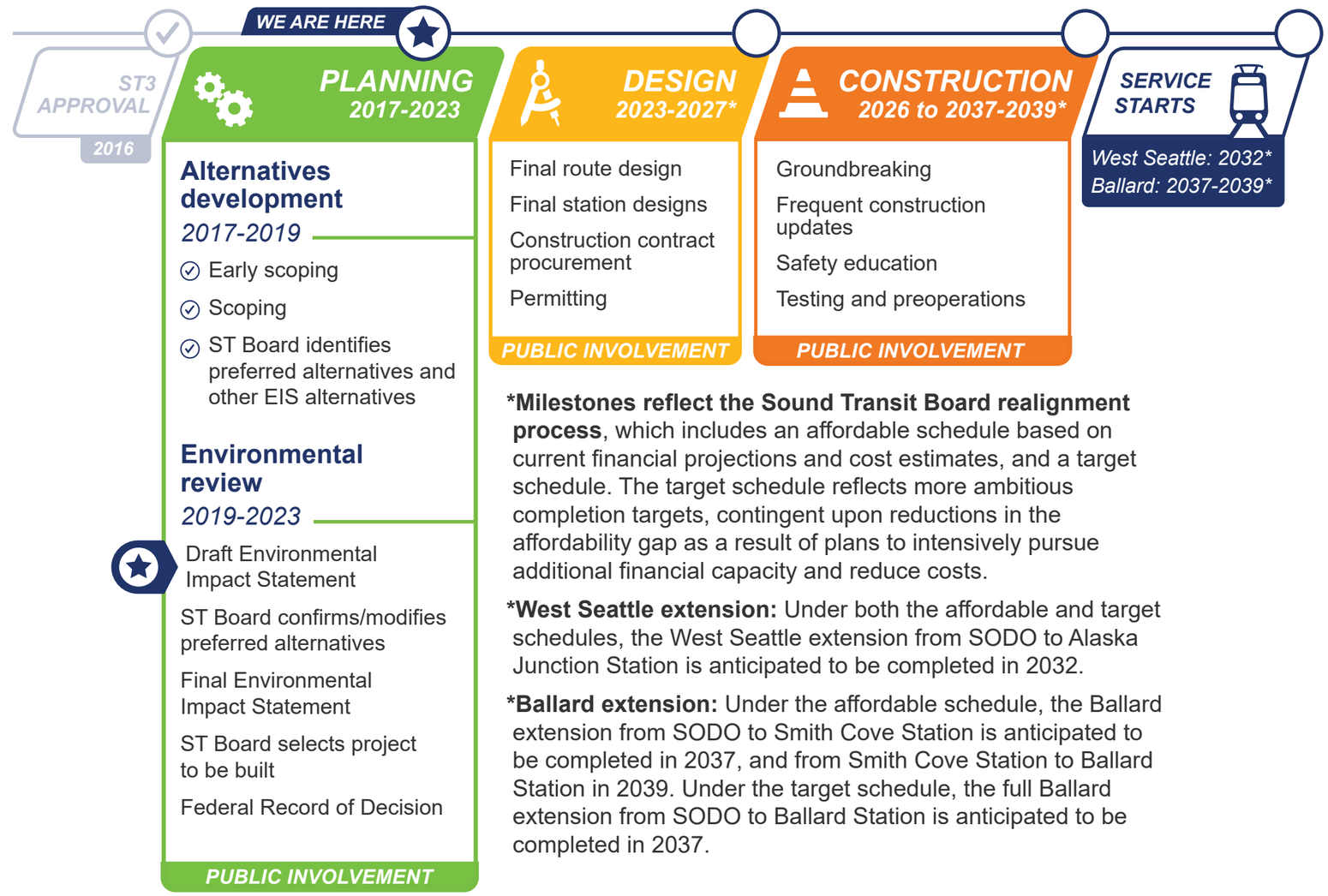
to evaluate and disclose the impacts of relocating the facility. Postal operations would be relocated to the replacement facility prior to the project impacting the existing facility. In the Chinatown-International District Segment, Option CID-1b* would displace the Ryerson Bus Base, resulting in changes to Metro's routings tied to a relocated base. If this design option were selected, Sound Transit would coordinate with Metro to identify appropriate capital, routing, alternative base locations, and access management strategies and implement those prior to displacement of the base.

ES.10 Next Steps

Following publication of this Draft Environmental Impact Statement, the following steps are expected (see Figure ES-49 for anticipated schedule milestones):

- Draft Environmental Impact Statement review and comment period: The Draft Environmental Impact Statement will be available for public and agency comment for 90 days. In addition, public hearings will be held during this comment period to receive oral testimony. Please see the Fact Sheet at the beginning of the Draft Environmental Impact Statement for details.
- Identification of preferred alternative: After consideration of analysis in the Draft Environmental Impact Statement and review of public and agency comments, the Board will identify the preferred alternatives for evaluation in the Final Environmental Impact Statement. The final decision on the alternatives to be built will not be made until after the Final Environmental Impact Statement is issued.
- Final Environmental Impact Statement. The Final Environmental Impact Statement will document and respond to substantive comments received on the Draft Environmental Impact Statement, describe and evaluate the preferred alternatives and other alternatives, identify impacts, and describe potential mitigation commitments associated with the project.
- Project decision. After completion of the Final Environmental Impact Statement, the Board will consider the alternatives evaluated in the Final Environmental Impact Statement and select the project to be built.
- Federal approval. FTA will issue a Record of Decision (ROD) document referred to as the federal ROD, which states FTA's decision on the project, identifies the alternatives considered, and lists mitigation commitments. The issuance of the ROD is required before federal funding or approvals.

Figure ES-49. Project Milestones



***Milestones reflect the Sound Transit Board realignment process**, which includes an affordable schedule based on current financial projections and cost estimates, and a target schedule. The target schedule reflects more ambitious completion targets, contingent upon reductions in the affordability gap as a result of plans to intensively pursue additional financial capacity and reduce costs.

***West Seattle extension:** Under both the affordable and target schedules, the West Seattle extension from SODO to Alaska Junction Station is anticipated to be completed in 2032.

***Ballard extension:** Under the affordable schedule, the Ballard extension from SODO to Smith Cove Station is anticipated to be completed in 2037, and from Smith Cove Station to Ballard Station in 2039. Under the target schedule, the full Ballard extension from SODO to Ballard Station is anticipated to be completed in 2037.

At-grade Link light rail train

ES.11 References

City of Seattle. 2016. *City of Seattle Transit Master Plan*. https://www.seattle.gov/Documents/Departments/SDOT/TransitProgram/TMPSupplmtALL2-16FINAL.pdf.

City of Seattle. 2018. *2019-2024 Proposed Capital Improvement Program*. http://www.seattle.gov/city-budget-office/capital-improvement-program-archives/2019-2024-proposed-cip.

Puget Sound Regional Council. 2018a. *The Regional Transportation Plan – 2018*. https://indd.adobe.com/view/1af394e0-4e37-4982-9155-a2ee1e221b75. May 31.

Puget Sound Regional Council. 2018b. *Regional Macroeconomic Forecast*. https://www.psrc.org/regional-macroeconomic-forecast.

Puget Sound Regional Council. 2020. *VISION 2050: A Plan for the Central Puget Sound Region*. https://www.psrc.org/sites/default/files/vision-2050-plan.pdf. Adopted October 29.

Sound Transit. 2013. *System Access Policy*. Resolution No. R2013-03 – Attachment A. https://wsdot.wa.gov/partners/erp/background/System%20Access%20Policy%20Resolution%20R2013-03%20-%20Attachment%20A%20-%20Final.pdf.

Sound Transit. 2014. *Regional Transit Long-Range Plan*. https://www.soundtransit.org/sites/default/files/documents/2015123_lrpupdate.pdf. Adopted December 18, 2014.

Sound Transit. 2016. *Sound Transit 3: The Regional Transit System Plan for Central Puget Sound*. http://soundtransit3.org/document-library. Adopted June 23, 2016.

Sound Transit. 2018. *Adopting an Equitable Transit Oriented Development Policy*. Sound Transit Board Resolution No. R2018-10. https://www.soundtransit.org/st_sharepoint/download/sites/PRDA/FinalRecords/2018/Resolution%20R2018-10.pdf. Adopted April 26, 2018.

Sound Transit. 2019. *Sustainability Plan – 2019 Update: Building a better tomorrow*. https://www.soundtransit.org/sites/default/files/documents/2019-sustainability-plan.pdf. January.

Sound Transit Board (Board). 2019a. *Motion M2019-51: Identifying West Seattle and Ballard Link Extension Alternatives for Study in a Draft Environmental Impact Statement*. https://www.soundtransit.org/st_sharepoint/download/sites/PRDA/ActiveDocuments/Motion%20M2019-51.pdf.

Sound Transit Board (Board). 2019b. *Motion M2019-104: A motion of the Board of the Central Puget Sound Regional Transit Authority recommending additional alternatives for study in the West Seattle and Ballard Link Extensions Draft Environmental Impact Statement*. https://www.soundtransit.org/st_sharepoint/download/sites/PRDA/FinalRecords/2019/Motion%20M2019-104.pdf.

United States Census Bureau. 2019. *Center for Economic Studies*. https://onthemap.ces.census.gov/. Accessed October 17, 2019.